A PRACTICAL
HANDBOOK OF MIDWIFERY

A PRACTICAL HANDBOOK OF MIDWIFERY

BY

FRANCIS W. NICOL HAULTAIN, M.D., F.R.C.P.E.

LECTURER ON MIDWIFERY, EDINBURGH SCHOOL OF MEDICINE,
OBSTETRICIAN ROYAL PUBLIC DISPENSARY, EDINBURGH

ILLUSTRATED

THIRD THOUSAND

LONDON
THE SCIENTIFIC PRESS, LIMITED
28 AND 29 SOUTHAMPTON STREET, STRAND, W.C.

Royal 8vo. Cloth Gilt. Illustrated with many Plates and Illustrations in the Text.
Price, 7s. 6d. net.

THE MENOPAUSE AND ITS DISORDERS.

BY
A. D. LEITH NAPIER, M.D., M.R.C.P., F.R.S.Ed., etc.
Late Editor of the *British Gynæcological Journal.*
Author of "Notes on Puerperal Fever," "The Thermometer in Obstetrics and Gynæcology," etc., etc.

LONDON: THE SCIENTIFIC PRESS, LIMITED,
28 AND 29 SOUTHAMPTON ST., STRAND, W.C.

PREFACE

At the request of a number of my former pupils I have published this little work. It is intended mainly to be a practical help to the busy practitioner, and, at the same time, to place before the student succintly the chief points of practical importance in the study of obstetrics.

F. W. N. H.

17 Rutland Street,
Edinburgh.

LIST OF ILLUSTRATIONS

CONTENTS

A PRACTICAL HANDBOOK OF MIDWIFERY

CHAPTER I.

Diagnosis of Pregnancy.

Table of Signs and Symptoms in Order of Occurrence.

Months	1	2	3	4	5	6	7	8	9
Suppression of Menses	×	×	×	×	×	×	×	×	×
Pulsation in Fornix Vaginæ	?	×	×	×	×	×	×	×	×
Morning Sickness		×	×	×	?	?	?	?	?
Softness of Parts		?	×	×	×	×	×	×	×
Mammary Areola			×	×	×	×	×	×	×
Dusky Hue of Vagina			?	×	×	×	×	×	×
Uterine Souffle				×	×	×	×	×	×
Ballottement				×	×	×	×		
Fœtal Heart				?	×	×	×	×	×
Enlargement of Abdomen				×	×	×	×	×	×
Fœtal Movements				×	×	×	×	×	×
Uterine Contractions					×	×	×	×	×
Shortening of Cervix			Apparent						×

The signs and symptoms of pregnancy may be divided into *probable* and *absolute*.

The "probable" are only of value when taken collectively, for independently they may all result from other causes. They are, however, the only guides during the first half of gestation.

The "absolute" are represented by the detection of the fœtal heart and parts, and are not recognisable till the latter half of pregnancy.

PROBABLE SIGNS AND SYMPTOMS.

I. Amenorrhœa.

Occurs usually immediately after conception, and is thus commonly relied on for calculating the probable date of confinement. (*See* page 67.) Alone it is of little value in diagnosing pregnancy or calculating the date of confinement.

1. It arises from other causes.
   - *a.* Anæmia (gradual in onset).
   - *b.* Fear of being pregnant.
   - *c.* Desire of being pregnant.
   - *d.* Menopause and superinvolution.
   - *e.* Atresia uteri.
2. Menstruation may continue during pregnancy.
   - *a.* In early months before deciduæ reflexa and vera have united.
   - *b.* To term, from
     - (1) Cervical polypi and erosions.
     - (2) From empty horn of double uterus.
3. Conception may occur during abeyance of menstruation.

a. During lactation.
b. Before being established.
c. In anæmia.

II. Pulsation in Vaginal Fornix (Anterior).

Of value in early weeks if associated with enlargement and softening of uterus.

III. Morning Sickness.

A reflex symptom, and usually represented by a feeling of nausea occurring any time during the day, but frequently more marked on first rising in the morning, hence name.

It commences, as a rule, after the first menstrual period missed, and ceases during the fourth month, when the uterus rises out of the pelvis. It may, however, be entirely absent, or be so severe and prolonged as to form a serious complication. (*See* page 22.) It is thus of little value alone in diagnosing pregnancy.

IV. Softness of Genital Canal and Uterus.

Specially marked after end of third month, but is evident earlier. It is probably due to the increased vascularity of the parts, and is a most valuable sign.

V. Mammary Changes.

1. Enlargement of glands and distension of superficial veins, associated with a feeling of fulness in the organs, which are frequently more or less painful.
2. After third month formation of areolæ and turgidity of nipple with secretion of milk. The areola of pregnancy is characterised by
   a. A darkening of the normal pink areola,

varying from a light brown in blondes to black in brunettes; and

b. An enlargement of the sebaceous glands surrounding the nipple (10 to 20) forming papillæ (Montgomery's tubercles).

Value of Sign.

Though characteristic of pregnancy it is by no means absolute, similar changes occurring in spurious pregnancy, and occasionally in uterine diseases. In multiparæ the mammary changes are of little value, as the areolæ, once formed, never fade entirely, while milk may be squeezed out of the breast years after lactation has ceased.

VI. Uterine Souffle.

A soft, blowing murmur, synchronous with pulse, heard over uterus by auscultation, due to blood passing through the curled uterine arteries, therefore best heard slightly above symphysis pubis after fourth month when uterus is abdominal.

It is present also in fibroids of uterus, and is therefore alone valueless as a sign of pregnancy.

VII. Dusky Hue of Vagina and Vulva.

A violet discolouration, due to engorgement of vaginal bulbs and venous plexuses, generally well marked by fourth month, but being absent in about 17 per cent. and present in some cases of uterine fibroma, is not an absolute sign.

VIII. Uterine Contractions.

Contractions of the uterus occurring at intervals of from five to twenty minutes, and continuing from three to five minutes, which can be felt by laying the hand over the abdomen after the fourth month.

Although a valuable diagnostic sign, it may be simulated by soft uterine myomata.

IX. Ballottement (Internal).

A passive movement of the fœtus, whereby it can be detected floating in the liquor amnii. It is obtained by pushing sharply per vaginum on the lower uterine segment through the anterior fornix and retaining the fingers there in situ; by this means the fœtus is pushed up towards the fundus uteri, but sinking again will be distinctly felt impinging upon the fingers. It is thus most manifest when the liquor amnii is relatively large in amount compared to the size of the fœtus (fifth to eighth month), and most conveniently performed with the patient in the dorsal position and with the shoulders raised.

Ballottement (External).

A similar process, but obtained with both hands placed externally, one on either side of the abdominal swelling.

X. Fœtal Heart.

An absolute sign, generally first heard from the eighteenth to twentieth week, and as distinct then as in the later months.

It resembles closely the ticking of a watch under a pillow.

Frequency.

Normally varies from 120-160 beats per minute, that of a male fœtus being said to be slower than in the female.

The frequency is diminished

a. During uterine contractions.

b. In early stages of fœtal suffocation.

The frequency is increased

a. By high maternal temperature (fever, etc.).

b. In later stages of fœtal suffocation.

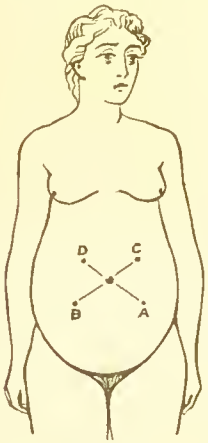

Fig. 1. Diagram showing points of greatest intensity of fœtal heart sounds.
A Left vertex positions.
B Right vertex positions.
C D Left and right breech positions

Position of Greatest Intensity.

In early months at fundus.

In later months according to presentation and position of fœtus, thus Fig. 1.

a. In cephalic presentations.
At centre of line from umbilicus to middle of Poupart ligament, to right or left, according to position of dorsum of fœtus.

b. In pelvic presentations.
Above plane of umbilicus.

c. In twin pregnancy two areas of greatest intensity are heard, the sound diminishing between them.

Points of diagnosis derived from fœtal heart sounds.

1. Pregnancy.
2. Life of fœtus.
3. Presentation and position of fœtus.
4. Multiple pregnancy.
5. Sex of fœtus. ?
6. Threatened asphyxia of fœtus.

XI. Enlargement of Uterus.

This is of a progressive nature, and is our most valuable aid to diagnosis before the detection of the fœtal heart.

It is only to be recognised by the bi-manual method of examination, all other methods being subject to error.

For the first three months it increases chiefly antero-posteriorly and transversely, and is thus still contained in the true pelvis. After this time it increases chiefly in the vertical diameter, and thus the fundus rises into the abdomen.

If it be remembered that at the end of the first month the ovum is the size of a pigeon's egg; at end of second month, hen's egg; and third

month, goose's egg, a better idea of the size of the uterus will be gained than by a detailed description and measurements.

XII. Progressive Enlargement of Abdomen.

The increase in the size of the abdomen begins to become apparent during the fourth month, at the end of which period the fundus uteri may be felt three fingers' breadth above the pubes. As this enlargement closely coincides with the period of pregnancy, the position of the fundus uteri is a valuable guide in estimating the probable date of confinement when other means are absent. This regularity of growth is also of value in determining pregnancy from other abdominal swellings whose growth is irregular.

Average Rate of Increase in Size of Uterine Tumour during Pregnancy.

In 15 weeks	—	Felt above pubes.
„ 20	„	Midway between pubes and umbilicus.
„ 25	„	Immediately below umbilicus.
„ 28	„	Advanced above umbilicus.
„ 34	„	Midway between umbilicus and epigastrium.
„ 36	„	At epigastrium.
„ 40	„	Slight descent.

Too rapid increase in early months indicates myxoma of chorion, and in later months hy dramnios or twins.

XIII. Fœtal Movements.

Usually first felt by the mother about the eighteenth

week, but varies from sixteenth to twentieth. It is called "quickening." The sensation is usually at first of a fluttering or pulsating character, and is sometimes associated with severe sickness and fainting.

In the later months the movements become objective, being recognisable by sight and touch, and in some cases they are so severe as to cause the mother much discomfort. Their prolonged absence is by no means indicative of death, though suspicious, while their presence is so closely simulated by borborygmi that subjectively they cannot be taken as a guarantee of pregnancy.

XIV. Fœtal Parts.

To be made out in the later months of pregnancy by abdominal palpation.

Method of Performance.

Stand at side of patient (who is placed in dorsal position, with legs drawn up), and lay hands flatly on abdomen, keep patient in conversation so as to relax recti, and slowly insinuate tips of fingers (without jerking) deeply, specially explore true pelvis with both hands simultaneously, as here the head is usually found, and is easily recognisable.

Tabular Statement of Points in Diagnosis of Pregnancy at Various Periods.

A. At end of second and third months.

1. Amenorrhœa.

2. Sickness.
3. Pulsation in fornix.
4. Softness of genital tract.
5. Mammary changes, etc.
6. Enlarged soft uterus in pelvis.

B. At end of fourth month.

To above add

7. Ballottement.
8. Quickening. ?
9. Uterine souffle.
10. Dusky hue of vulva and vagina.
11. Uterus now palpable through abdominal walls.

C. From fifth till end of ninth month.

Same signs and symptoms as previously.

Morning sickness now usually ceased, but superadded we have

1. Enlargement of abdomen.
2. Detection of fœtal heart and parts.
3. Uterine contractions.

D. At end of ninth month.

1. Uterine tumour falls slightly.
2. Breathing becomes more easy.
3. Locomotion more difficult.
4. Micturition more frequent.

These symptoms form the so-called "lightening before labour."

Differential Diagnosis.

The diagnosis of pregnancy should never be communicated unless absolute certainty is entertained.

It may most commonly be confounded with

Ovarian tumours.

Fibroid tumours of uterus.

Ascites.

Pseudocyesis.

Salient Points of Differential Diagnosis.

1. From ovarian tumour.
   - *a.* Regularity of growth of uterine tumour.
   - *b.* Amenorrhœa (sudden in onset).
   - *c* Fœtal heart and parts.
   - *d.* Uterine contractions.
   - *e.* Uterine souffle.
   - *f.* Regular outline of tumour.
   - *g.* Softness of genital tract.
   - *h.* Ballottement.
2. From fibroids by
   - *a.* Amenorrhœa (most important).
   - *b.* Softness of uterus.
   - *c.* Regular rate of growth.
   - *d.* Regular outline of tumour.
3. From ascites by
   - *a.* Fœtal heart and parts.
   - *b.* Uterine souffle.
   - *c.* Softness of cervix.
   - *d.* History of growth.
   - *e.* Ballottement.
4. From pseudocyesis by
   - *a.* Dull note on percussion.
   - *b.* Non-disappearance of swelling under anæsthesia.

CHAPTER II.

Pathology of Pregnancy.

This may, for practical purposes, be grouped into three distinct classes.

I.—Intercurrent diseases in no way due to pregnancy, but which exercise a distinct influence upon the gravid state, or are themselves reacted upon by this condition.

II.—Intercurrent diseases due to pregnancy.

III.—Morbid states of the uterus and ovum, which seriously affect the normal relationship between the mother and fœtus, and thereby endanger the life of one or other, or both.

(See table on following page.)

.—Intercurrent Diseases Independent of Pregnancy.

I.—RESPIRATORY.

Pneumonia.

Effect of Pregnancy on.

The pregnant state predisposes to this affection from the now normal excess of fibrine in the blood.

Practical Classification of Pathology of Pregnancy.

- Pathology of Pregnancy
  - Diseases Complicating Pregnancy.
    - Respiratory.
      - Pneumonia
      - Pleurisy.
      - Phthisis.
    - Malaria.
    - Syphilis.
    - Cardiac.
    - Eruptive Fevers
      - Variola.
      - Scarlatina.
      - Measles.
      - Typhoid.
  - Diseases due to Pregnaucy.
    - Reflex Neuroses.
      - Vomiting.
      - Salivation.
      - Neuralgia.
      - Chorea.
      - Depraved Appetite
      - Asthma.
      - Cough.
    - Meutal.
      - Melancholia.
      - Mania.
    - From Pressure.
      - Varicose Veins.
      - Dyspnœa.
      - Jaundice.
      - Constipation.
      - Leucorrhœa.
      - Albuminuria.
      - Bladder Troubles
  - Abnormal Pregnancy.
    - 1. False Pregnancy.
    - 2. Abnormalities of Uterus.
      - Double Uterus.
      - Displacements
        - Forward.
        - Backward.
        - Downward.
      - Neoplasms.
        - Fibroids.
        - Carcinoma.
    - 3. Extra Uterine Gestation.
      - Extra Peritoneal
        - Tubal.
        - Interstitial.
        - Sub-Peritoneal Pelvic.
      - Intra Peritoneal
        - Ovarian.
        - Abdominal.
        - Tubo-Ovarian.
      - Combined Varieties.
    - 4. Anomalies of Decidua.
    - 5. Anomalies of Placenta.
    - 6. Anomalies of Ovum
      - Amnion
        - Absence of Liq. Amnii
        - Hydramnios.
      - Chorion—Hydatid Mole.
      - Cord.
      - Embryo.
    - 7. Premature Expulsion of Uterine Contents.
    - 8. Delayed Expulsion of Uterine Contents
      - Dead.
      - Alive.

It also aggravates the disease in the later months by increasing the dyspnœa, through

a. Impeding the movements of the diaphragm ;

b. The normal deficiency of red blood corpuscles.

Effect of Pneumonia on Pregnancy.

Great tendency to kill ovum from high temperature, and thus bring on premature expulsion.

Terminations.

If slight—

1. May resolve.
2. May induce expulsion of uterine contents, which usually gives relief.

If severe—

Almost always causes abortion, which usually aggravates disease.

Prognosis.

I. Maternal.

At all times grave, but varies.

Graver—*a.* If occurs in later months.

b. If expulsion of uterine contents.

Statistics.

a. Before 180th day 28 cases with 11 abortions, in which 23 recovered and 5 died. Deaths all occurred after abortion.

b. After 180th day 15 cases with 10 premature labours, 8 recovered and 7 died—5 after expulsion.

II. Fœtal.

Very grave. Cause of death, high temperature.

Treatment as in ordinary non-complicated cases; but

a. Do not bring on labour.

b. If labour commenced, hasten.

c. Allow free hæmorrhage.

PHTHISIS.

Effect of Pregnancy on.

Although authorities differ, it may be said that pregnancy acts on phthisis,

a. By precipitating its development.

b. By hastening its progress.

The puerperal state specially acts deleteriously on phthisical women.

The practical deductions then are, outside of all hereditary arguments on the side of the fœtus.

Phthisical women should not marry.

If they bear children, should not nurse.

Generally, it may be said that all respiratory affections are prone to aggravation by the pregnant state, first, by the normal excess of carbonic acid in the blood of pregnant women; and, secondly, by the interference with the movement of the diaphragm in the later stages of gestation.

II.—ERUPTIVE FEVERS.

SMALLPOX.

I. Effect of pregnancy on.

Nil.

II. Effect on pregnancy.

a. Varioloid. Has little action.

b. Discrete variola.

Tends to cause expulsion of ovum.

Prognosis is favourable in early months, but graver in advanced gestation.

c. Confluent variola.

Almost always causes expulsion of ovum.

Recovery seldom.

III. Effect on fœtus.

a. Frequently dies from high temperature.

b. May live and be born healthy at full term.

c. May be born with smallpox.

d. May develop smallpox after birth, as late as three months after mother.

e. May be born with smallpox, though mother escapes.

f. In twins one may suffer and the other escape.

g. Generally resist vaccination if born healthy.

SCARLATINA.

I. Effect of pregnancy on.

Pregnant women seldom develop scarlatina.

Puerperal women specially liable.

May develop in puerperium though exposed only to infection months previously. Pregnancy thus seems to indefinitely prolong the incubation period.

II. Effect on pregnancy.

Generally causes expulsion of ovum.

If expulsion takes place mortality great. During puerperium it forms one of the most virulent types of puerperal fever.

III. Effect on fœtus.

May or may not be infected.

MEASLES.

I. Effect of pregnancy on.

Tends to aggravate and gives rise to hæmorrhagic type.

Aggravates the concomitant respiratory conditions.

II. Effect on pregnancy.

50% abort.

Recovery usual.

III. Effect on fœtus.

May have measles in utero.

May develop after birth.

TYPHOID.

I. Effect of pregnancy on.

Pregnancy somewhat mitigates the disease.

Puerperium aggravates it.

II. Effect on pregnancy.

Tends to cause premature expulsion 182 times in 322 cases = 56 %

If this occurs prognosis grave.

TYPHUS.

Most fatal of all fevers to mother and child.

MALARIA.

I. Effect of pregnancy on.

Mitigates disease.

Changes its periodicity.

II. Effect on pregnancy.

Slight, may induce abortion.

Fœtus may be born with malaria.

Treatment.

Quinine in large doses, little fear of the drug inducing expulsion.

Syphilis.

I. Effect of pregnancy on.
   Aggravates primary symptoms.
   Ameliorates secondary symptoms.

II. Effect on pregnancy.
   Tendency to abort (231 in 426 cases).

Maternal.

(Varies in accordance with age of disease, and if acquired before or after conception.)

a. Syphilis before conception—

Great tendency to premature expulsion.

If gestation prolonged to term—

1. Child may be born healthy, and remain so (exceptional).
2. Child may be born healthy, and show signs of syphilis within three months.
3. May show signs of syphilis at birth.
4. May die from convulsions, etc., in a few days without showing signs of syphilis.

b. Syphilis at time of impregnation.

Conditions same as in *a*.

c. Syphilis acquired after conception varies with age of ovum.

1. In earlier months child frequently tainted.
2. In later months generally healthy child.

Successive abortions ("habit") may be the only indication of syphilis.

Paternal syphilis.

Ovum may be affected without mother becoming syphilitic, or showing signs of disease.

Practical Deductions.

I. Forbid marriage till two years after disappearance of syphilide of any kind.

II. If married, try to ensure a correspondent sexual abstinence.

Treatment.

Mercury and iodide of potassium.

Rules.

Treat as it were syphilis all cases of habitual abortion (husband and wife).

Treat children by mercurial inunction.

Allow mother to nurse child.

Forbid the wet nursing of syphilitic children.

CARDIAC DISEASES.

I. Effect on pregnancy.

All tend to cause premature expulsion, 92 in 220 cases.

a. From carbonic acid poisoning fœtus.

b. From carbonic acid causing excessive uterine contractions.

c. Venous congestion causing hæmorrhage into placenta, etc.

II. Effect of pregnancy on heart disease.

Tends to aggravate all varieties.

Statistics.

87 cases—Stationary, 21.

Aggravated during pregnancy, 55.

Aggravated during labour, 11.

Causes of aggravation.

1. From increase of blood during pregnancy.
2. Increased arterial tension, specially in labour during pains.

Mitral disease most common and dangerous.

Symptoms.

Venous congestion.
Œdema.
Ascites.
Albuminuria.
Pulmonary congestion.
Hæmorrhages.

Aortic stenosis.

Palpitation and dyspnœa, followed, if severe, by symptoms similar to those in mitral disease.

Treatment.

1. During pregnancy; as in uncomplicated cases.
   Induce labour if symptoms grave.
2. During labour.
   Stimulate freely. (Ether subcutaneously.)
   Hasten second stage.
   Do not fear chloroform.
   Let patient bleed freely in third stage.
   If heart wavers from increased arterial tension, inhalation of nitrite of amyl. is often beneficial.

Question of Marriage.

Every case must be judged on its own merits.

If marked mitral lesion, point out dangers and try to prevent marriage.

In aortic stenosis, dangers insufficient to prevent, unless very exaggerated.

CHAPTER III.

Diseases due to Pregnancy.

Uncontrollable Vomiting.

Onset.

Usually insidious.

Generally in early months (38 in 43 cases before fourth month).

Course.—(Three Stages.)

1. Patient vomits after every meal; constant nausea usually present. Anxious expression develops along with emaciation and weakness from starvation. Occasional hæmatemesis. Short remissions at which times patient eats anything with impunity.
2. Aggravation of previous symptoms, with *rise in temperature*, developing gradually from an evening rise. Extremities cold, and great tendency to syncope.
3. Diminution and cessation of vomiting; increase of fever Mental symptoms, delirium, coma, and death.

Causes.—(Theoretical.)

1. Distension of uterus confirmed by
   a. Greater frequency in primiparæ.
   b. Frequent accompaniment of rapid dilatation as in myxoma of chorion.
2. Simple flexions of uterus. (Hewitt.)

3. Erosions of cervix.
4. Compression of uterus when incarcerated.
5. Emotion, grief, etc.
6. Adhesion of ovum to uterus preventing expansion.
7. Albuminuria. (J. Y. Simpson.)
8. Compression of ovary.

First three probably most frequent.

Prognosis.

Grave.

Specially if second stage reached, 46 deaths in 118 cases.

Effect on Pregnancy.

May produce premature expulsion, which is favourable; but this may prove a direct cause of death if patient much reduced.

Treatment.

Recognise gravity early, and treat.

1. *Dietetic.*
   - *a.* Plain food in small quantities often. Vary diet not to sicken patient.
   - *b.* Milk and potash water only in severe cases.

   If all food rejected, try peptonised rectal alimentation, and inunction of oil.
2. *Medicinal.*

   Many remedies advocated; perhaps the most effectual are—

   Bismuth and oxalate of cerium, of each 10 grs. before meals.

   Morphia subcutaneously.

Keep bowels open.

Sinapisms to epigastrium.

3. *Surgical.*

According to condition.

a. Replace flexed uterus.

b. Paint eroded cervix with nitrate of silver 10 grs. to ℥i.

c. Dilatation of cervix with finger (apt to bring on abortion.)

4. *Obstetrical Treatment.*

Induce premature expulsion before second stage has advanced far.

Always consult before doing so.

SALIVATION.

Usually commences early in pregnancy, and is incurable; it may, however, be alleviated by bitters, quassia, orange-peel, etc.; ceases after pregnancy is ended.

MINOR REFLEX NEUROSES.

Neuralgia, cough, depraved appetite.

Remember cause, and treat by antispasmodics, such as

℞ Potass brom. ℥iv..
Mist camphor. ad ℥vi.
Sig. ℥p. ter die.

CHOREA.

Rare, but important from its gravity.

Causes.

Primiparity.

Previous attacks.

Rheumatic diathesis.

Period of Development.

At any time during pregnancy.

More frequent in early months (15 in 20 cases before fifth month).

Symptoms and Course.

Those of ordinary chorea often exaggerated.

Usually commences gradually; may be sudden, however.

May cease, but usually persists till expulsion of uterine contents.

Is rarely prolonged into puerperium, 3 in 69. (Spiegelberg.)

Results.

Causes abortion in 50 per cent.

Mortality, 17 per cent. of cases (Barnes); three times more frequent in multiparæ.

Exhaustion is usual cause of death.

May cause mania by preventing sleep.

Treatment.

As in ordinary cases.

Bring on premature expulsion if severe.

Sleeplessness.

A grave symptom, and a frequent precursor of severe mental derangement. Thus treat early by sulphonal or other soporifics.

Diseases due to Pressure.

Varicose Veins.

In lower portions of body.

Due to increased abdominal tension and pressure of uterus on iliac veins.

Chiefly affects veins of inferior extremities and pelvic plexuses. Worst in multiparæ.

Treatment.

In *lower extremities* as in *non-pregnant* cases.

If vulvar or vaginal, great tendency to hæmatoma during labour; treat therefore rigidly before expected confinement by recumbent position of patient, and pressure on vulva with pad of cotton wool.

DYSPNŒA.

Specially marked in later months from pressure of uterus on diaphragm, but may occur earlier from excess of carbonic acid and diminution of red corpuscles, normally met with in blood of pregnant women. If aggravated, always examine for cardiac disease.

JAUNDICE.

1. *Simple.*

Rare, but important, as it may be a precursor of malignant type (acute yellow atrophy) to which there is special liability during pregnancy.

2. *Malignant.*

Very grave. 30 in 68 died.

Specially if associated with pregnancy.

Signs and Symptoms.

Intense jaundice.

Scanty urine, often hæmaturia.

Continuous vomiting.

Convulsions and coma.

Generally causes abortion.

Duration.

May kill in twelve hours or last six days; ends almost always in death.

Cause.

Impairment of renal excretion of bile salts.

Treatment.

Medicinal, as uncomplicated case.

Do not procure expulsion of uterine contents, as this seems to aggravate.

LEUCORRHŒA.

A frequent accompaniment of pregnancy, often associated with intense backache, and sometimes pruritus vulvæ.

Treatment.

Styptic vaginal injections of

Sulphate of copper, ℥i. to quart of tepid water; or

Sulphate of zinc, ℥ii. to quart of tepid water.

To be used morning and evening.

BLADDER TROUBLES.

Frequent micturition in early months.

Difficulty in micturition about term.

Incontinence about fifth month is suspicious sign of excessive retention due to gravid retroposition of uterus.

ALBUMINURIA.

A most anxious condition during pregnancy.

Frequency.

Occurs in about 3 per cent. of all pregnancies.

May occur at any time, but is much more frequent in later months.

Commonly first appears during labour

Three times more frequent in primiparæ.

Causes.

a. Bladder affections.

b. Kidney disease pre existing.

c. Pregnancy.

1. From pressure by uterus on ureters.
2. From increased vascular tension in kidneys, the result of
   - *a.* Excess of blood in pregnant state.
   - *b.* Obstruction to venous return from increased abdominal pressure.
   - *c.* Reflex nervous influence from uterus.

Symptoms.

1. May be none. This rare if albuminuria be pronounced.
2. Headache and lassitude.
3. Affections of special senses.
   - Flashes of light.
   - Deafness and buzzing in ears.
   - Loss of memory.
4. Thirst.
5. Epistaxis.
6. Diarrhœa alternating with constipation.

Signs.

1. May be none.
2. Œdema of face and eyelids, spreading to hands, etc.
3. Pulse quick and hard.

4. Albumen in urine.
   Casts if nephritis present.

Results.

1. May be none.
2. Permanent kidney disease.
3. Convulsions. Eclampsia.

Prognosis.

1. If slight and not increasing, favourable.
2. If œdema and much albumen and casts, grave.
3. If eclampsia, very grave ; 26 per cent. die.

Treatment.

Systematically examine the urine of all pregnant women in the later months of gestation. This applies specially to primiparæ.

Dietetic.

Absolute milk diet, 4 quarts daily at least.

If albumen disappears may try ordinary diet ; but if it returns again put rigidly on milk.

Medicinal.

1. Relieve action of kidneys by stimulating excretion from skin by prolonged hot baths.
   $\frac{1}{20}$th gr. pilocarpine subcutaneously.
2. Assist bowels by saline purgatives (Henry's solution, ℥i. each morning).
3. Increase renal secretion by strophanthus, belladonna, and buchu.

ECLAMPSIA.

A convulsive seizure simulating epilepsy, but without any cry.

Two Types.

Tonic and clonic.

These usually occur one after the other during the same fit, but may occur independently and alternate with each other.

Description of Fit.

Clonic.

Twitching of facial muscles and rolling of the eyes causing great facial contortion, combined with rapid spasmodic movements of head and extremities, stertorous breathing, and marked cyanosis.

Tonic.

Fixation of eyes, protrusion of tongue, trismus and distortion of face, often associated with opisthotonos.

To these add marked cyanosis and injection of conjunctivæ, and the horrible picture requires no further description.

Each fit as a rule lasts from 15 to 20 seconds, and leaves the patient in a dazed condition, usually accompanied by a raised temperature.

The attacks vary in severity and frequency. If fits numerous, the patient is in a state of complete stupor during intervals, and eventually becomes comatose be-

fore death, which frequently results from œdema of brain and lungs or from apoplexy.

Frequency.

1 in 500 cases.

Most frequently developed during labour

316 cases—

62 during pregnancy.
190 „ labour.
64 „ puerperium.

Five times more frequent in primiparæ. If present in multiparæ is generally associated with pre-existing kidney lesion, or excessive uterine distension, *i.e.* twins, hydramnios, etc.

Cause.—(Theoretical.)

Probably from cerebral anæmia, the result of high arterial tension caused by

1. Excess of blood.
2. Excrementitious matters in blood from renal insufficiency
3. Uterine contractions.

Prognosis.

Maternal.

Very grave. 26 per cent. die.

Graver if due to permanent pre-existing kidney disease.

Graver if developing during pregnancy 39 per cent. die.

Fœtal.

Grave.

a. From premature expulsion.

b. From suffocation.

Treatment.

I. *If fit imminent* as recognised by perversions of special senses, etc.

1. Give chloral syrup, ℥i. every two hours for eight hours, to combat reflex excitement.
2. Pilocarpine, $\frac{1}{3}$rd gr. subcutaneously and prolonged hot bath, 105° F. raised to 112° F. to stimulate skin.
3. Pulv. Jalap Co., grs. 60.
4. Milk diet, etc., same as in albuminuria.

II. *If fit developed during pregnancy without causing uterine contractions.*

1. Anæsthetize by chloroform.
2. Pilocarpine, $\frac{1}{2}$ gr. subcutaneously.
3. Cover with many blankets, and surround with hot-water bottles.
4. Inject chloral, 30 grs., into rectum every three hours for nine hours.
5. 1m. of croton oil on back of tongue.

If fits cease, treat as in albuminuria —milk diet, etc.

III. *If fit developed with uterine contractions,* treat as in II., but empty uterus as quickly as is consistent with safety of mother.

The question of the probability of recurrence of eclampsia in future

pregnancies is chiefly to be decided on the persistency of signs of kidney mischief.

If absent, subsequent pregnancies are usually free from return of eclampsia.

If present, eclampsia is to be feared.

CHAPTER IV.

Abnormal Pregnancy.

Spurious Pregnancy, also called Pseudocyesis,

Is the simulation of the pregnant state by the non pregnant, and is occasionally well marked.

There may be present

- Ammenorrhœa.
- Sickness.
- Enlargement of abdomen.
- Mammary changes with milk secretion.
- Quickening.
- False labour pains.

Causes.—Reflex nervous.

a. From mental perversions met with in

1. Sterile women at menopause.
2. Newly married, who are desirous of offspring, or think it the natural result of matrimony.
3. Unmarried, who have had illicit intercourse.

b. From disease of generative organs.

Fibroids, etc.

Diagnosis.

a. History.

Symptoms of pregnancy usually not in the normal routine.

b. Signs.

1. Percussion of abdomen tympanitic.
2. Auscultation negative.
3. Vaginal examination gives negative signs, no softness.
4. Uterine tumour disappears when patient is anæsthetized.

Treatment.

Galbanum, valerian, and assafetida.

ANTEFLEXION OF GRAVID UTERUS.

In early months.

Normal.

If aggravated, causes frequent micturition.

In late months.

May protrude between recti to knees.

Causes difficult locomotion and dysuria.

Is cause of dystocia from changing axis of uterus.

Met with chiefly in multiparæ.

If in primiparæ, is sign of contracted pelvis.

Treat by binder or obstetric belt applied with patient in dorsal position.

PROLAPSE OF GRAVID UTERUS.

Partial.

Os externum at vulva.

Tends to right itself as uterus grows.

Complete.

Procidentia.

Uterus entirely outside vulva.

Abortion always occurs if not replaced.

Symptoms.

Bearing-down feeling.

Difficulty in defæcation and micturition.

Treatment.

Replace and keep in position by ring pessary.

HERNIA OF GRAVID UTERUS. (*Very rare.*)

Varieties in order of frequency.

1. Inguinal.
2. Umbilical.
3. Femoral.

Abortion usually takes place.

If not, bring it on and reduce by taxis.

If unable, divide constricting ring.

In some cases hysterectomy has had to be performed.

RETROFLEXION OF GRAVID UTERUS.

Probably a frequent condition in early months, but as it rights itself without giving rise to symptoms is seldom met with.

Causes.

1. Impregnation in an already retroposed uterus.
2. Acquired during pregnancy.
   a. By a strain or fall.
   b. By over-distension of bladder?

Course.

1. May right itself.
2. May become completely incarcerated in pelvis.
3. Part may remain in pelvis, and part grow into abdominal cavity.

Symptoms and signs.

a. In early months often absent. May have
   1. Bearing-down pains.
   2. Vesical and rectal symptoms from pressure.
   3. Excessive sickness.

b. After fourth month.

1. Aggravation of rectal troubles.
2. Retention of urine, with dribbling, by far the most important.
3. Abdominal tumour (distended bladder.)
4. Abdominal pain.
5. Pain in back and legs.
6. Sickness.

Diagnosis.

1. History of Pregnancy.
   Ammenorrhœa, etc.
2. Abdominal tumour, with dribbling of urine.
3. Vaginal examination
   Shows softness of parts.
   Large swelling posteriorly.
   Cervix usually inaccessible.
4. Catheterization dissipates abdominal tumour.

Prognosis.

In early months favourable.

In later months grave.

a. From diseases of bladder (necrosis).

b. From sloughing of pelvic organs.

c. From renal congestion and uræmia.

Treatment.

Replace and keep in position by pessary.

Method of Reposition if incarcerated.

1. Empty bladder.
2. Put patient in genu-pectoral position, and with fingers in vagina or rectum, push steadily on incarcerated uterus upwards, and as far as possible to one or other side of sacral promontory.

3. If previous efforts unavailing, place patient in Sim's position (abdomino-lateral) and anæsthetize; now repeat previous efforts.
4. If still unavailing, grasp anterior cervical lip if accessible with volsella, and drag it downwards steadily, while, at the same time, push steadily as before on fundus through rectum.
5. If reposition impossible, procure abortion by passing sound and rupturing membranes; if cervix inaccessible, aspirate liquor amnii through posterior fornix, after which leave in situ for a few hours before attempting reposition; abortion always takes place after drawing off the liquor amnii.

Fibromyoma of Uterus.

I. *Effect on Pregnancy.*
   a. Tend to prevent conception by causing uterine congestion.
   b. If conception occurs, they tend to cause abortion from uterine congestion; this specially applies to interstitial and submucous varieties.

II. *Effect on Parturition.*
   a. May impede passage of child if low in uterus.
   b. May cause serious hæmorrhage by impeding uterine contraction.
   c. Give rise to irregular uterine contractions.

III. *Effect on Puerperium if submucous.*
   1. May be origin of puerperal fever from their tendency to necrose after labour.

2. Often give rise to secondary hæmorrhage, perhaps weeks after labour, from their pedunculation and extrusion.

IV. *Effect of Pregnancy on Fibromyoma.*

1. Causes great enlargement of muscular fibres of tumour, which thus increases in size, and also becomes softer from increased vascularity.
2. After labour, the uterus, contracting on submucous tumour, tends to expel it as a polypus, and in some cases so interferes with its circulation that it suppurates or necroses.

Treatment.

If impeding delivery.

1. If in parturient canal, remove, if possible, by ecraseur or enucleation.
2. If sub-peritoneal, try to push it out of pelvis.
3. If diagnosed early in pregnancy as probable source of impediment to labour, procure abortion.
4. If only diagnosed during labour, and cannot be removed, Cæsarian section offers best chance to both mother and child.
5. Remember tendency to complicate puerperium.

CARCINOMA OF CERVIX.

Effect of Pregnancy on.

Tends to hasten disease by increasing the vascularity of the organ.

Effect on Pregnancy.

Pregnancy may occur at all stages, and is seldom affected.

The usual symptom of ammenorrhœa is generally masked by the discharge.

Some authors state that there is a tendency to protracted gestation.

Effect on Parturition.

If slight, disease has little effect.

If disease advanced, cervix is undilatable, and therefore tears, with copious accompanying hæmorrhage, which may be fatal.

Prognosis.

Grave in the future from rapidity of growth during pregnancy.

Grave in the present from risks of parturition.

Treatment.

1. If diagnosed in early pregnancy, procure abortion to prevent rapid increase of disease, and also save risks of parturition.
2. If diagnosed late in pregnancy and disease advanced, Cæsarian section.

CHAPTER V.

I.—Extra-Uterine Gestation.

Synonyms.—Extra-uterine pregnancy, ectopic gestation.

Definition.

The fixation and development of an impregnated ovum outside the lining membrane of the uterus.

Varieties and Course.

May be enumerated in the following schematic manner, as modified from Lawson Tait:—

Scheme of the Course of Extra-Uterine Pregnancy.

THREE PRIMARY VARIETIES.

I. Abdominal, including Ovarian?
II. Interstitial Tubal, generally fatal from early rupture.
III. Free Tubal, ovum contained in free portion of tube.
a. Ovum may die, and form tubal mole.
b. May continue to grow and form secondary varieties, as under:—

1. Rupture tube into peritoneal cavity, usually fatal to mother.

2. Stretch or rupture tube, but remain between layers of broad ligament (extra-peritoneal), where

3. Grow into peritoneal cavity through fimbriated extremity (secondary abdominal).

4. Ovum dies at period of rupture, and is absorbed, or forms abscess, which may burst into bladder, rectum, etc. (extra-peritoneal hæmatocele).

5. Ovum grows

a. To full time and is viable (extra-peritoneal).

b. May die later, but remain quiescent and form lithopœdion.

c. May rupture peritoneal covering, and become abdominal, and live (secondary abdominal).

1. Without rupturing membranes.

2. Rupturing membranes.

Note.—In all varieties it is probable that the original attachment to the tube remains, although the subsequent outgrowth of the placenta may form further attachment to surrounding parts.

Cause.

Some obstruction in Fallopian tube insufficient to prevent ingress of spermatozoa, but enough to prevent egress of ovum. Many have been stated, but are only problematical.

Symptoms and Signs.

I. In early months

a. May have none.

b. May have symptoms of normal pregnancy.

c. Most frequently.

1. Pain in side.
2. Irregular hæmorrhages from uterus.
3. Shedding of uterine decidua.

Signs.

a. Soft mass in close proximity to uterus.

b. Uterus enlarged and soft.

II. In later months

The signs and symptoms of pregnancy, usually associated with much abdominal pain and irregular vaginal hæmorrhages. Rupture of the sac commonly occurs before any abdominal enlargement is noticed.

Symptoms of Rupture.

Rupture most frequently occurs between fourth and twelfth week. In 88 cases, 74 ruptured before sixteenth week, and 6 went to full time without rupture.

I. Intra-peritoneal rupture.
   1. Sudden and intense abdominal pain.
   2. Shock.
   3. Intense and increasing pallor; sighing: small fast pulse and restlessness.
   4. Early death usually results.

The signs are indefinite.

A diffuse abdominal distension, and vaginally an indistinct fullness in fornices from blood effusion.

II. Extra-peritoneal rupture.
   1. Sudden pain in abdomen, as if something had burst.
   2. Shock.
   3. Signs of hæmorrhage not so exaggerated as in intra-peritoneal.

The signs are definite.

Distinct abdominal tumour, and vaginally a tumour posterior to uterus, which it tilts upwards and forwards above pubic symphysis, or to one or other side of pelvis.

Clinical Course after Rupture.

I. Intra-peritoneal.

Nearly always die from bleeding in a few hours if not treated.

II. Extra-peritoneal.

Bleeding usually stops, but may be so severe as secondarily to rupture into peritoneum, and become intra-peritoneal.

For further course see schematic table, p. 41.

Prognosis.

Very grave; 70 per cent. die if untreated.

Treatment.

1. If diagnosed early before rupture.
   Removal of tube and sac by laparotomy.
2. If intra-peritoneal rupture.
   Laparotomy; ligature and remove ruptured tube and sac.
3. If extra-peritoneal.
   Ice bags to abdomen and perfect rest, and treat as in other severe hæmorrhages.
   Subsequently treat as ordinary hæmatocele by ice bags and rest.
   If suppuration occurs, perform laparotomy, open sac, stitch to abdominal wall, wash out, and drain.
4. If gestation reaches full time
   Wait till spurious labour has passed at least six weeks, then perform laparotomy. Child is now dead. Open sac, remove fœtus, stitch sac to abdominal wall, and then wash out and drain. It is safer to leave placenta to disintegrate in sac, as attempts at removal may prove directly fatal from bleeding.
   If laparotomy be performed at time of spurious labour, to get a living child, the risk is greatly increased to mother.
   19 cases in 34 recovered by waiting.
   3 „ 30 „ after immediate operation.

II.—Diseases of Membranes.

Diseases of Amnion.

I. Defective secretion of liquor amnii.

In early months causes

a. Adhesion of embryo to amnion.

b Intra-uterine amputation from amniotic bands, causing compression.

c. Impediment to fœtal growth.

In later months

a. Causes undue sensation of fœtal movements.

b. Delay in labour from absence of fore-waters.

II. Hydramnios, dropsy of ovum.

Definition.

When the amount of liquor amnii is so great that it produces morbid symptoms by its distension of the uterus, pressure on the abdominal or thoracic viscera, or the fœtus. It cannot, therefore, be gauged by a given amount.

Period of Onset.

More frequent in multiparæ.

Most frequently in later months (after sixth), but may develop in early months, causing vomiting from excessive uterine distension, and frequently ending in premature expulsion.

Cause.

Frequently associated with one twin, hydrocephalus and other fœtal malformations. Probably *fœtal*, due to some obstruction to flow of blood in umbilical vein, as hepatic disease, etc.

It is said to be due to the persistence in the later months of the vasa propria, situated outside amnion, on the placental surface. These vessels are the supposed origin of the liquor amnii, and normally atrophy after sixth month.

Symptoms in later months

1. Undue size of uterine tumour, giving rise to pressure symptoms, as œdema of legs and vulva, with ascites.
2. Vomiting from over distension of uterus.
3. Scanty urine and albuminuria in many cases.
4. Difficult locomotion.
5. Dyspnœa from pressure on diaphragm.

Signs.

1. Large smooth abdominal tumour, which does not correspond to normal growth of pregnant uterus.
2. Thrill and succussion wave.
3. Fœtal heart and parts difficult to make out.
4. Ballottement well marked.

Effect on Pregnancy and Parturition.

1. Frequent premature expulsion.

2. First stage of labour unduly prolonged from inability of uterus to contract.
3. Undue prolongation of second stage from uterine inertia following over-distension.
4. Postpartum hæmorrhage from uterine inertia.
5. Involution of uterus apt to be incomplete.

Effect on Fœtus.

1. Frequently expelled prematurely.
2. Frequently deformed anencephalic, etc.
3. May die from pressure.

Prognosis

To mother, favourable, as a rule.

To child, unfavourable ; 30 per cent. dead born; many born alive subsequently die during first week.

Hydramnios may occur in subsequent pregnancies.

In one woman, 9 times in 10 pregnancies.

Diagnosis.

May mistake for ovarian or parovarian tumour, alone or complicating pregnancy. If symptoms severe and doubt exist, never operate before passing sound into uterus.

Ballottement is the best and safest diagnostic test of hydramnios from other tumours.

Treatment.

Apply tight binder and ensure rest ; if

anxious symptoms occur, puncture membranes, and labour will follow in a few hours.

MYXOMA OF CHORION,

Also called hydatidiform mole and vesicular mole, is essentially a disease of the chorionic villi, consisting in their enormous development in number and size.

Morbid Anatomy.

Hypertrophy and mucoid degeneration of connective tissue of villi, with increase of epithelium. To the naked eye the hypertrophied villi look like white currants or grapes (according to size).

Villi tend to grow into sinuses in uterus, thus thinning and even perforating the wall.

Period of Occurrence.

Generally in first weeks of gestation, when villi are diffuse over entire ovum.

If the disease be now general, the ovum dies, and is absorbed, no trace being found on expulsion of mass.

If the disease appear later, and thus becomes localised, the ovum may continue to grow till full time, the placenta being enlarged and myxomatous.

The growth of the diseased villi is extremely rapid, and distends the uterus to a size quite out of proportion to the period of gestation, thus in four months uterus may be size of full time pregnancy.

Causes.

Doubtful.

Said to be maternal, because

1. It tends to recur.
2. It is often associated with diseased decidua.
3. Often found in syphilitic women.

Said to be fœtal,

Because in twins one may be a mole, the other healthy.

It is never found without impregnation.

Symptoms and Signs.

1. Enlargement of uterus quite out of proportion to period of pregnancy.
2. Pain in back and loins.
3. Uncontrollable vomiting from over-distension of uterus (occasionally absent).
4. Ballottement absent.
5. Lower uterine segment tense.
6. May have discharge of cysts per vaginam.

Prognosis

To mother, grave.

1. From exhaustion through vomiting.
2. From perforation of uterus by villi, causing peritonitis.
3. From postpartum hæmorrhage and septicæmia, uterus being difficult to empty absolutely.

Treatment.

If no urgent symptoms,

Wait for spontaneous expulsion.

If urgent symptoms,

Dilate cervix with tupelo tent.

Introduce hand and shell growth out; but beware of rupture of thinned uterine wall.

Dangers.

1. Hæmorrhage (treatment, see page 190).
2. Uterine rupture from thinned or perforated walls.
3. Septicæmia from retained portions which are too adherent to be removed, therefore, after manual removal, always wash out uterine cavity with solution of perchloride of mercury, 1 in 4000, and repeat if signs of septic absorption.

DISEASES OF DECIDUA.

Probably the most frequent cause of abortion.

In most cases is the result of a pre-existing endometritis, or may be the result of constitutional conditions, such as syphilis, etc.

Varieties

May be for practical purposes divided into

1. Hypertrophic.
2. Atrophic.
3. Degenerative.

Hypertrophy of Decidua

Is usually the result of inflammation, and may, therefore, be looked on as of three types.

a. Congestive.

b. Acute inflammatory.

c. Chronic.

a. The congestive variety is met with usually in full-blooded, plethoric women, and as it tends to produce hæmorrhages into the decidual substance, it is frequently the cause of abortion.

b. Acute inflammation of the decidua is extremely rare, and is met with only in women the victims of specific fever, as smallpox, measles, etc.

c. The chronic hypertrophy is a much more common condition, being either

a. Diffuse.

b. Polypoidal.

c. Catarrhal.

Diffuse Chronic Hypertrophy

May be met with in the decidua vera or reflexa, alone or combined, and is primarily the result of inflammatory exudation and excessive proliferation of decidual cells, which goes on to connective tissue formation and degeneration.

In extreme cases the ovum dies, and is absorbed, the empty decidua being cast off at a varying period (perhaps months later) as a fleshy mass (carneous mole).

In later months it tends to cause adherence of the membranes to the uterus by the connective tissue preventing separation at the usual site (spongy layer).

Polypoidal Hypertrophy.

A similar condition to that previously described, but characterised by the formation of polypoidal eminences on the fœtal surface.

From its extreme vascularity, it generally causes early abortion from resulting hæmorrhage.

Catarrhal Hypertrophy

Is the result of hypertrophy of the normal glandular tissue, which secretes large quantities of watery mucus.

This may escape freely and cause a persistent discharge, or may collect and escape in gushes, giving rise to the disease called *hydrorrhœa gravidarum.* This sudden escape may be mistaken for

1. Rupture of membranes and escape of liquor amnii, or
2. Escape of fluid which sometimes collects between chorion and amnion.

It may be diagnosed from either by the fact that it recurs if pregnancy continues.

Atrophic Variety

Is a defective development of the decidua, and thus does not afford a suitable attachment for the ovum, which dies. The decidua is subsequently cast off as an empty sac, closely simulating

the condition met with in membranous dysmenorrhœa.

It may also be considered a cause of placenta prævia, as from want of development it does not tend to arrest the ovum in the body of the uterus, and the ovum is thus first arrested at the os internum, and forms its attachment to the lower uterine segment.

Degenerative Variety.

An early fatty degeneration of the decidua, which tends to early expulsion.

1. From rupture of blood-vessels and hæmorrhage.
2. From early detachment of ovum.

PLACENTA.

The normal human placenta is usually discoid, measures about 7 to 8 inches in diameter, and weighs from 12 to 20 ounces. Its relative weight to that of the fœtus is about 1 to 6·5.

Its normal situation is in the body of uterus and on anterior or posterior wall in equal frequency.

Anomalies of shape and size.

May be irregular (horse-shoe), and sometimes is diffuse, surrounding entire ovum (P. membranacea). It may be divided into distinct lobes (P. bipartite

and tripartite), or may have small accessory lobules (P. succenturiata).

If situated in lower uterine segment, it is called placenta prævia.

Diseases.

The placenta being partly formed from decidua must naturally be liable to most of the decidual diseases already described. Those necessarily must interfere with its functions and cause defective development or death of the fœtus and subsequent expulsion.

To describe them in this situation would be superfluous; but we must not forget that the placenta, from its partial fœtal formation, may further be the seat of disease from that direction, such as œdema, myxoma, etc.

The placenta seems specially to be affected by syphilis when conveyed by the mother. This consists in a gummatous proliferation of decidual cells which gives the maternal surface of the placenta a characteristic pale pinkish colour. When conveyed by the father to the fœtus, patches of the villi of the chorion are seen to be filled with cells, while their epithelium proliferates greatly. The capillary fœtal vessels are thus obliterated and

secondary fatty degeneration takes place.

A practical hint to be derived from the study of the diseases of decidua, is that, being due in the majority of cases to pre-existing endometritis, in cases of successive abortion ("Habit of Aborting") endometritis should be looked for and treated if present.

UMBILICAL CORD

Is usually inserted into placenta, about its centre, and measures from 18 to 24 inches in length, but may vary from 2 to 80 inches. It is composed of a mucoid tissue (Wharton's jelly), ensheathed by a layer of amnion, and contains 2 arteries and 1 vein (umbilical vessels) and the stalk of umbilical vesicle. It is usually spirally twisted, and in the majority of cases from right to left.

Anomalies

Of insertion.

1. Into edge of placenta (battledore). 14 per cent. of cases.
2. Umbilical vessels may separate and branch before reaching placenta, and enter between amnion and chorion. (Velamentous insertion.)

Miscellaneous Anomalies.

Knots may form on cord from fœtal movements; if tight they seriously impede the fœtal circulation and may cause death of fœtus.

The cord may form loops round any of the members of the fœtus and seriously interfere with their growth. From this cause it may become so shortened as materially to impede labour (acquired short cord).

CHAPTER VI.

Premature Expulsion of Uterine Contents.

Is called abortion or miscarriage if contents are expelled before viability of fœtus (before seventh month).

Premature labour is the term applied to expulsion after date of viability of fœtus.

Frequency.

About one in five pregnancies.

Thirty-seven per cent. of child-bearing women miscarry before thirty years of age.

Multiparæ more liable than primiparæ.

More common before fourth month.

a. From greater vascularity of decidua predisposing to hæmorrhage.

b. Attachment of ovum less secure before placental formation.

Most apt to occur at period corresponding to menstrual period.

Most Frequent Causes.

Paternal.

1. Constitutional diseases, specially syphilis.
2. Extremes of age.

Maternal.

1. Poisons in blood.

a. Syphilis.
b. Zymotic fevers.
c. Jaundice.
d. Albuminuria.
e. Excess of carbonic acid in cardiac and lung affections.

2. Impoverished state of blood from
   a. Vomiting.
   b. Suckling, prolonged.
   c. Famine, etc.
3. High temperatures.
   In pneumonia, rheumatism, etc.
4. Nervous.
   a. Mental shock, fear, worry, excitement.
   b. Direct reflex, suckling.
5. Local uterine disease.
   a. Diseases of decidua.
   b. Diseases of placenta.
   c. Fibromyomata.
   d. Displacements.
   e. Congestion from
      Plethora.
      Cardiac and hepatic disease.
      Excessive coitus.
6. Irritation from bladder and rectum.
7. Direct violence.
   Riding, dancing, etc.
   Jolting from rough driving.

Fœtal Causes.

1. Death of ovum.
2. Hydramnios.
3. Myxoma of chorion

4. Arrest of circulation from knots in cord, etc.
5. Rupture of membranes.
6. Anomalies in development.

Symptoms.

I. Hæmorrhage.

II. Pains—uterine contractions.

These may occur independently together.

I. *Hæmorrhage.*

Is sign of separation of ovum, and varies in quantity, sometimes being but slight, at other times so excessive as to endanger life of mother. Is often expelled in clots. It may arise from any part of ovum, and burrow

a. Between uterine wall and decidua.

b. Between decidua vera and reflexa.

c. Between decidua reflexa and fœtal membranes.

d. May burst into amniotic cavity.

The last two form the so-called apoplectic ova.

Hæmorrhage at all times tends to cause death of the ovum from separation and pressure, and this is, in many cases, the direct cause of uterine contractions and expulsion.

II. *Uterine Contractions.*

Pains are always intermittent, and vary much in intensity.

They cause further separation of the ovum and dilatation of the cervix.

Diagnosis.

1. History of pregnancy, amenorrhœa, etc.

2. Signs of pregnancy, specially enlargement and softness of uterus.
3. Hæmorrhage and pains, independently or associated.
4. May have dilatation of os internum.

Varieties of Abortion.

1. Threatened.
2. Inevitable.
3. Imperfect.
4. Missed.

A threatened abortion is said to be present when the signs and symptoms are sufficiently slight as to allow of reasonable hope that death of the ovum and its expulsion may be averted.

An inevitable abortion is said to be present where the signs or symptoms are so severe that death or expulsion of the ovum is assured. Thus, severe hæmorrhage, or escape of liquor amnii, or dilatatiou of os internum, are indicative of this variety.

By imperfect abortion is meant the retention in utero of some portion of the ovum after abortion.

Diagnosis of Imperfect Abortion.

1. Within twenty-four hours after supposed abortion.
    a. History of pregnancy, ammenorrhœa, etc.
    b. History of expulsion of mass.
    c. Continuance of pains and hæmorrhage.

d. Dilatation of os internum.

e. Enlargement and softness of uterus.

2. After a week or more.

a. History of ammenorrhœa.

b. History of profuse bleeding with pain, and perhaps expulsion of clots, fleshy lumps, etc.

c. Persistence of bleeding.

d. Enlargement and softness of uterus.

e. Occasional fœtid discharge and high temperature.

The above symptoms of hæmorrhage and pains are sometimes closely simulated by a uterine polypus, but the previous ammenorrhœa is in these cases always absent. If the pre-existing amnienorrhœa be of short duration, such cases are generally considered to be merely delayed menstrual periods, and abortion is often overlooked.

A missed abortion is the term applied to these cases in which death of the ovum takes place, but expulsion is delayed for a considerable period (perhaps a year). When cast off, the ovum appears shrivelled and of a brown colour. Before expulsion its diagnosis is difficult, but may be conjectured, from

1. History of pregnancy in which all the symptoms except the ammenorrhœa pass off; thus the breasts, previously big, become

small, and the abdominal enlargement, if present, decreases.

2. A feeling of weight and coldness in hypogastrium.
3. Enlarged doughy uterus.

This variety is interesting medico-legally from the occasional long retention in utero of the ovum.

Treatment.

I. Of threatened abortion, try to avert by
   - *a.* Absolute rest in bed.
   - *b.* Empty rectum with enema.
   - *c.* Morphia suppositories, $\frac{1}{4}$ gr. every three hours for twelve hours.
   - *d.* Ext. viburnum prunifolium, 2-8 grs.

II. Of inevitable, remove uterine contents as soon as possible.

a. If os internum open,

1. Give liquor ergotæ ℥i., or quinine, grs. x.
2. Try and express by supra-pubic pressure.
3. Hot vaginal douche, 115° Fahr.
4. While still compressing with left hand supra-pubically, introduce fingers into uterus, separate and scrape out ovum.
5. After removal, wash interior of uterus with 1·4000 corrosive sublimate solution.

b. If os undilated, and hæmorrhage severe,

1. Give ergot or quinine.

2. Plug vagina. (*See* page 185.) This controls hæmorrhage and excites uterine contractions.

If vaginal plug inefficacious in dilating cervix, introduce tupelo tent.

After dilatation of cervix, treat as above described.

Intra-uterine manipulations being painful, it is well to use anæsthetic where practicable.

Treatment of Imperfect Abortion.

Immediate.

1. Examine all discharges.
2. Supra-pubic pressure.
3. Explore uterine cavity with finger, and scrape away any retained portions.
4. Give liquor ergotæ ℥i. ter die.
5. Wash out uterus as before stated.

Remote.

1. Rest in bed.
2. Ergot ℥i. ter die.
3. Hot douche (vaginal). If ineffectual,
4. Curette uterine cavity.

Treatment of Missed Abortion.

Introduce tent, and treat as in inevitable.

After all cases of abortion, rest in bed should be enjoined for a week after all bleeding ceases, to insure involution of the uterus.

Prevention of Abortion.

Many women habitually miscarry, the so-called "habit" of aborting.

Many of these cases are due to syphilis, endometritis, and deeply lacerated cervix, which

must be treated accordingly, yet much may be done to avert by enjoining a healthy mode of living *(see* Hygiene of Pregnancy, page 65), and special precautions should always be taken at the time corresponding to the menstrual periods.

CHAPTER VII.

Hygiene of Pregnancy and Calculation of Date of Confinement.

Hygiene of Pregnancy.

Pregnant women require to exercise a certain amount of care at all times, but this varies much in different individuals. Some abort from the least indiscretiou, while others can endure much without it in the least tending to produce premature expulsion or other untoward symptoms.

During pregnaucy *plenty of fresh air* is always beneficial, as there is a uormal excess of carbonic acid in the blood.

Exercise should always be moderate, aud specially so in later months.

Walking is the best form of exercise, and driving in the country is to be encouraged, but on the rough streets of a town is always objectionable.

Dancing and riding and fatigue are at all times dangerous and should be avoided.

Crowded entertainments are apt to bring on syncope in some, and are therefore risky.

The method of dress is most important.

Tight stays at all times are to be condemned, but especially so after the fourth month. When

abdominal enlargement manifests itself, elastic-sided stays or an obstetric belt are to be recommended, and are most comfortable; if these cannot be got, a flannel binder forms an excellent substitute.

Garters, if used, should be worn above the knee, and must never be tight; suspenders are preferable.

Flannel under-drawers should always be worn, but especially in later months, when from the prominence of the abdomen the skirts are removed from the legs.

The *diet* does not require to be changed unless sickness or severe indigestion be present; if so, attention should be paid to it as soon as possible, as by early treatment uncontrollable vomiting may usually be averted.

The bowels during pregnancy have a special tendency towards constipation, and should be regulated by light aperients, as eascara, Henry's solution of salts, and saline waters.

If there be much vaginal secretion, syringing with plain tepid water is comforting and non-injurious.

Warm baths 95° to 98° F. should be regularly taken, but cold bathing is contra-indicated.

The breasts if painful and heavy should be supported by bandages, and the nipples for the last three months of gestation should be hardened by being bathed morning and evening with whisky and water, equal parts, or other astringents.

Retracted nipples should be drawn out and retained in their extended position for a few minutes daily by an elastic ring placed round their base.

The urine should be tested for albumen in the seventh, eighth, and ninth months (this specially holds good in primiparæ).

At the periods corresponding to the menstrual periods now in abeyance, great caution should always be observed, as abortion is more apt to occur then. Small operations, railway journeys, etc., should, therefore, be specially avoided at these times.

CALCULATION OF DATE OF CONFINEMENT.

The probable length of gestation is, from the most reliable statistics, 273 days from the date of impregnation.

The ovum impregnated is probably that which is cast off with the last menstrual period; as a rule ovulation occurs at the end of menstruation, maturation of the follicle occuring during menstruation. Thus if menstruation lasts 7 days (which is about the normal period) and the ovum be impregnated immediately on its dehiscence, the confinement would be due 280 days from the first day of menstruation.

This 280th day is our nearest approach to approximate calculation, and is the method used generally, but naturally it is subject to the following fallacies:—

I. Ovulation may occur at any time independently of menstruation.

II. Impregnation may not occur till some days after ovulation, the ovum meanwhile resting in the fallopian tube.[1]

III. Labour may be premature or delayed.

From these causes alone it will be seen that precise calculation is impossible, but as menstruation is usually in abeyance after impregnation, this method of calculation is nearest and easiest.

In general, therefore, the 280 days are calculated as being nine calendar months and a week, but for precise details of calculation of the 280th day, tables should be referred to.

TABLE FOR CALCULATING THE PERIOD OF UTERO-GESTATION.

NINE CALENDAR MONTHS.					TEN LUNAR MONTHS.		
From		To		Days.	To		Days.
January	1	September	30	273	October	7	280
February	1	October	31	273	November	7	280
March	1	November	30	275	December	5	280
April	1	December	31	275	January	5	280
May	1	January	31	276	February	4	280
June	1	February	28	273	March	7	280
July	1	March	31	274	April	6	280
August	1	April	30	273	May	7	280
September	1	May	31	273	June	7	280
October	1	June	30	273	July	7	280
November	1	July	31	273	August	7	280
December	1	August	31	274	September	6	280

Calculation of the date of confinement, if the menstrual history is unobtainable, is made

a. From date of quickening. This must at all times be haphazard, as the period

[1] The ovum is said to live 10 days without impregnation.

of quickening varies as much as a month.

b. From the size of the uterine tumour. (*See* page 7).

c. From the length of fœtus in utero, its length in utero corresponding in inches to its age in lunar months. (*See* Induction of Premature Labour, page 170).

CHAPTER VIII.

LABOUR.

Also called parturition or confinement, may be defined as the expulsion of the uterine contents.

Is naturally a physiological process, but so finely balanced that the least deviation renders it pathological.

It is much more complex and tedious in the human race than in the lower animals, chiefly because

1. Pelvic axis is curved, that of outlet and inlet being at right angles to one another.
2. Large size of fœtal head, its diameters being larger than those of the body.
3. Diameters of pelvis vary from above downwards ; transverse is longest at inlet, while antero posterior is longest at outlet ; thus rotation of presenting part must take place to become accommodated to them.

Nature's proof of the greater difficulty to birth is to be found in the vastly greater thickness of the uterine wall.

Labour increases in difficulty and danger.

1. In higher grades of civilisation.
2. In higher classes.
3. With male fœtus from larger size.

Mortality from child-birth is about 1 in 115.

GENERAL CONSIDERATION OF LABOUR.

It is divided into three stages—first, second, and third.

The *first stage* begins with premonitory symptoms, and ends with full dilatation of cervix. It is the stage of preparation.

The *second stage* commences after full dilatation of os uteri, and ends with expulsion of the fœtus. Is stage of expulsion of fœtus.

The *third stage* begins after expulsion of fœtus, and ends with the expulsion of the placenta and membranes. It is the stage of detachment and expulsion of placenta and membranes.

FACTORS OF LABOUR.

The powers, passages, and passengers.

a. The powers are three in number—

1. Uterine contractions (primary.)
2. Muscular contractions. } secondary.
3. Weight of ovum. }

I. UTERINE CONTRACTIONS. PAINS.

Are involuntary and intermittent, but vary in the different stages of labour.

In the first stage they are less severe, but more continuous, and are said to be cutting in character.

In the second stage they are stronger, and are associated with the contractions of the abdominal muscles (secondary powers) They are characterized as down-bearing.

The intermittency of the pains prevents exhaustion of the mother, and allows of the

free placental circulation, which is cut off during a pain.

Effect of Pains.

a. In first stage.

1. Retraction and contraction of uterine body.
2. Elongation of lower uterine segment.
3. Dilatation of cervix, till it offers no constriction to passage of ovum through genital canal. This is called "canalisation" of genital tract.

The result of the above mechanism is—

1. The detachment and exposure of the lower pole of the ovum (membranes), which therefore presents; and
2. The formation of a thickened ring of muscular tissue at the junction of the actively contracting body and the passive lower uterine segment, which is called the "retraction" or "contraction" ring.

b. In second stage.

Uterine contractions are now accompanied by the contractions of the abdominal walls and diaphragm, which assist

1. In tilting uterus, so that its longitudinal axis is in the axis of the brim.
2. In promoting expulsion.
3. In preventing excessive retraction.

The result is the expulsion of the fœtus.

The force of the combined efforts is variously estimated from seventeen to fifty-five lbs.

c. In third stage.

Uterine contractions firstly separate and then expel placenta and membranes into vagina, from whence they are expelled by the secondary powers and are born.

II. Passages.

The cervix, vagina, vulva, and true pelvis.

For their description the reader must be referred to an obstetrical text-book.

III. Passenger. The Ovum.

May be divided into three parts during labour.

1. Free part exposed to examining finger.
2. The gripped or resisted portion in contact with the "girdle of resistance."

The portion which lies above the plane of the "girdle of resistance," which is the part acted on by the general contents pressure of the uterus.

Fœtal Head.

This being the largest and most important obstetrical part of the fœtus requires detailed description.

The bones being small and not apposed, their junction is formed by membranous com-

missures called sutures, which are named.

1. Frontal, between frontal bones.
2. Coronal, between frontal and parietal.
3. Sagittal, between parietals.
4. Lambdoidal, between parietals and occipital.

Where more than two bones meet, membranous spaces are formed called fontanelles. These are named anterior and posterior.

Anterior Fontanelle.

Is formed at junction of coronal, sagittal, and frontal sutures.

It is large and lozenge-shaped.

Is sometimes called the "Bregma."

Posterior Fontanelle.

Is formed at junction of sagittal and lambdoidal sutures.

It is small and triangular in shape.

That part of head situated between the fontanelles and bounded laterally by the parietal eminences is known as the vertex.

The measurements of the fœtal head are called diameters (Figs. 2, 3). Their names indicate the points of measurement, and do not require detailed description.

Antero-Posterior Diameters.

Occipito-mental, 5 inches.

Occipito-frontal, $4\frac{1}{2}$,,

Sub-occipito-bregmatic, 4 inches, from midway

between posterior fontanelle and foramen magnum to anterior fontanelle.

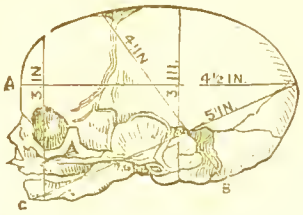

Fig. 2. *Diameters of Fœtal Head.* A, occipito-frontal; B, sub-occipito-bregmatic; C, occipito-mental; D, fronto-mental; E, cervico-bregmatic.

Transverse Diameters.

Bi-parietal, $3\frac{1}{2}$ inches.
Bi-temporal, 3 ,,
Bi-mastoid, $2\frac{3}{4}$,,
Bi-frontal, $2\frac{1}{2}$,,

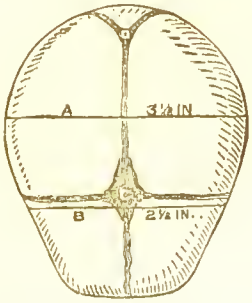

Fig 3. Fœtal head, from above, showing A, bi-parietal diameter; B, bi-frontal diameter; C, anterior fontanelle; D, posterior fontanelle.

Vertical Diameters.

Fronto-mental, 3 inches.
Cervico-bregmatic, 3 inches.

CLINICAL ASPECTS OF LABOUR.

First stage.

Premonitory Symptoms and Signs.

Not always present.

May occur any time within a month of actual labour.

Due to preparatory uterine activity, and are thus indicative of an easy labour.

They consist in

a. Sinking of uterine tumour, which causes

Breathing to become easier.

Walking more difficult.

Frequent, sometimes difficult micturition, and rectal symptoms from pressure.

b. Increased vaginal secretion (shows).

c. Shortening of cervix, and eventually

d. Pains. (True.)

Situated usually in loins and back, and which, on vaginal examination, cause lower pole of ovum to feel tense. They can thus be differentiated from *false pains*, which are irregular painful sensations, felt usually in abdomen, and which are never associated with regular uterine contractions or tense

state of lower pole of ovum. False pains are usually due to constipation, errors of diet, or fatigue, and should be treated by rest, enemata and morphia suppository, $\frac{1}{4}$ gr.

CLINICAL APPEARANCES OF ACTUAL FIRST STAGE.

1. Dilatation of os.
2. Formation of bag of membranes.

Dilatation of Os.

Its duration varies greatly within normal limits, and is slower in primiparæ than multiparæ. Average duration in multiparæ, twelve hours; in primiparæ, twenty hours. Dilatation is slow at first, but is more rapid after os size of crown piece.

Formation of Bag of Membranes.

Is due to the peeling off of the lower uterine segment from the lower pole of ovum.

It consists of sac of chorion, amnion, and decidua, filled with liquor amnii.

Is globular in shape if normal, but is sausage-shaped in abnormal conditions, *viz.* contracted pelvis and malpresentations, etc.

After full dilatation of os, the membranes usually rupture, and the forewaters escape. The entire liquor amnii should, however, not escape, as the presenting part usually forms an efficient plug, being closely gripped by the soft canals at "girdle of contact."

Phenomena of Second Stage.

These vary greatly according to the presentation and position of the fœtus, and will therefore be found under their detailed description.

Phenomena of Third Stage.

After expulsion of trunk the uterus remains contracted from its inherent tonicity, and its cavity is entirely filled by the placenta.

From the extreme diminution in size of the uterine cavity the placental site is much diminished, and thus separation of the placenta is commenced. This is assisted and completed in a short time by the recurrence of pains, and the placenta is subsequently expelled into the vagina, from whence it is born by the action of the secondary powers.

THE PUERPERIUM.

The puerperium is the period following delivery, during which the economy is returning to its normal state.

Phenomena.

1. Uterus involutes.
2. Decidua entirely cast off.
3. Mucosa of uterus is regenerated.
4. Vagina contracts.
5. Secretion of milk is instituted.

It is perhaps the most critical period connected with child-birth.

Involution of Uterus.

A definite process which takes six weeks to complete.

The uterus diminishes from 24 ozs. to 3 ozs. in weight.

During first ten days the process may be easily noted, the fundus uteri normally being felt about the following level :—

Immediately after labour,		below level of umbilicus.
First day after labour,		two fingersbreadth above umbilicus.
Second ..	„	one fingerbreadth above umbilicus.
Third „	„	at level of umbilicus.
Fourth „		
Fifth .	„	one fingerbreadth below umbilicus.
Sixth „	„	two fingersbreadth below umbilicus.
Seventh „	„	mid-way to symphysis.
Eighth „	„	two fingersbreadth above pubes.
Ninth „	„	one fingerbreadth above pubes.
Tenth „	„	in pelvis.

Note.—The umbilicus is not a fixed point, but is useful as an adjacent land-mark.

Involution is frequently associated in multiaræ with painful uterine contractions, "after-pains."

They seldom last longer than twenty-four hours; if they do persist, they are indicative of some retained roducts of conception.

They ought not to occur in primiparæ normally, but if met with are usually signs of retained secundines.

They may be mistaken for inflammation, but may be diagnosed from such by

1. Intermittency.
2. Cessation on pressure.
3. Absence of fever.
4. Increase of lochia.

They are occasionally associated with inflammatory states (page 223).

If slight, they are salutary, and require no treatment.

If severe, compress uterus supra-pubically, and give morphia suppository, $\frac{1}{4}$ grain.

See that rectum and bladder are empty.

Lochia.

During the initial stages of the puerperium, there is a vaginal discharge (lochia). This, for the first five days, is red and hæmorrhagic, after which it gradually becomes paler and more serous till it ceases in from ten days to three weeks.

It is composed of blood, mucus and degenerated cells in varying proportions, according to length of time after delivery.

The odour is heavy, but should not be fœtid.

Sudden, early stoppage is indicative of inflammation.

The uterine mucosa is fully regenerated after a month.

Secretion of Milk.

Usually commences on third day, but may be earlier or later. The breasts are at first hard, knotty, and painful, and the tem-

perature slightly raised 99·5°, F.—sometimes called milk fever.

General Conditions of Puerperal State.

Pulse slow at first, 60-70.

Temperature slightly raised 99·5° F. for first few days.

Liver and bowels sluggish ; other emunctories active, especially the skin.

Frequently much nervous exhaustion.

CHAPTER IX.

Mechanism of Normal Labour.

I. Natural.

Vertex alone presenting, termination within twenty-four hours.

II. Unnatural.

a. Laborious.

1. Lingering. Vertex presenting, but not ended within twenty-four hours.
2. Instrumental.
   - Safe to mother and child.
   - Destructive to child.
   - Injurious to mother.

b. Preternatural. Other than vertex presenting.

1. Breech.
2. Shoulder.
3. Face.

c. Complex. Complicated labour.

1. Maternal.
   - Hæmorrhage.
   - Rupture of Uterus.
   - Displacement.
   - Convulsions, etc.
2. Fœtal.
   - Prolapse of cord.
   - Plural births.
   - Monsters, etc.

The "*presentation*" is the part felt by examining finger at os uteri.

The "position" is the relation of presenting part to pelvis of mother.

The "disposition," relative position generally of fœtus in utero to maternal parts.

"Attitude"—the relation of fœtal parts to one another in utero. The normal attitude is complete flexion.

VERTEX PRESENTATION.

The vertex presents in 96% of all cases. In these cases the occipito-frontal plane of the head is parallel to plane of brim. The vertex is thus in axis of brim.

Diagnosis.

1. By external palpation and auscultation (see p. 7).
2. By vaginal examination.
   a. Before labour, hard globular mass felt through anterior vaginal fornix.
   b. After os uteri open, sutures and fontanelles may be felt according to position.

Positions of Vertex.

Four, named after position of occiput, which is the "denominator."

1. Occiput anterior and to the left of symphysis —*left occipito-anterior* (L. O. A.)
2. Occiput anterior and to the right of symphysis —*right occipito-anterior* (R. O. A.)
3. Occiput posterior opposite right ilio-sacral synchondrosis — *right occipito-posterior* (R. O. P.)

4. Occiput posterior opposite left ilio-sacral synchondrosis—*left occipito-posterior* (L.O.P.

Relative frequency.

L. O. A., 65%
R. O. P., 20%
R. O. A., 10%
L. O. P., 5%

The L. O. A. position is thus by far the commonest, and is called the "normal." It will be noted that in 85% the occipito-frontal diameter lies in the right oblique of pelvis. This is said to be due to the left oblique being encroached on by the sigmoid flexure of colon.

Diagnosis of Positions.

1. By external palpation and auscultation (most valuable).
2. By vaginal touch.

In occipito-anterior position the posterior fontanelle is easily felt to the front, and is to be recognised by only three sutures running from it. The anterior fontanelle is usually inaccessible to the examining finger, being so far up posteriorly and to the right.

In occipito-posterior positions the anterior fontanelle is most easily felt, being forwards, and is to be recognised by its large size and four sutures running from it. The posterior fontanelle is usually also within reach, flexion of the head being generally well marked.

Mechanism of L. O. A. Position.

At commencement of labour, occipito-frontal dia-

meter is in right pelvic oblique, parallel with plane of brim.

Movement of descent takes place (the result of general contents pressure).

Obstruction being met with at "girdle of contact," flexion occurs.

Flexion is the result of the steep occipital end of wedge-shaped head forming a smaller angle to "girdle of contact," and effects a substitution of the sub-occipito-bregmatic (4 in.) for the occipito-frontal diameter ($4\frac{1}{2}$ in.).

Descent continuing, the vertex reaches the second parallel plane of the pelvis, where the occiput is rotated forwards behind the pubes by the action of the resilient pelvic floor (Internal Rotation).

This results in the accommodation of the antero-posterior diameter of fœtal head to the increasing conjugate of the pelvis.

After the vertex has descended so far as to allow the occiput becoming freed from the anterior pelvic wall, the powers now act on the sinciput alone, driving it downwards, and thus the chin is separated from the sternum (Extension).

From the powers acting downwards and backwards, and the pelvic floor forwards, the head is driven downwards and forwards in axis of outlet.

This movement, accompanied by extension, results in birth of head.

The head being born, the occiput rotates to the left into its original position (External Rotation or Restitution). The transverse diameter of

shoulders now lies in the left oblique, the right shoulder anterior.

From the rotation forwards of the right shoulder, to allow of the bi-acromial diameter occupying the conjugate instead of the left oblique, the fœtal head is further rotated, so that the face looks directly towards the mother's right thigh.

The right shoulder now becoming fixed beneath the pubic arch, the left glides over perineum, and they are born, the rest of the trunk following.

The entire mechanism is thus simply an accommodation of the fœtal head and shoulders to the pelvis.

In R. O. A. positions the mechanism is identical with L. O. ., the occiput rotating forwards from the right to behind the pubic symphysis.

CHANGES IN THE FŒTAL HEAD.

During its passage through the pelvis the fœtal head becomes "moulded" in a definite manner, and assumes a characteristic appearance, according to the position it occupied. This is due to changes in the scalp and in the skull.

1. *Changes in Scalp. (Caput succedaneum.)*

A swelling on the scalp forms on the part of vertex free from pressure, due to a transudation of serum, and is thus most marked in labours delayed in second stage.

In L. O. A. positions this naturally forms on superior posterior angle of right parietal bone and posterior fontanelle.

In R. O. A. on corresponding part of left parietal bone and posterior fontanelle.

In occipito-posterior positions, on anterior fontanelle and vertex, which gives the head a sugar-loaf shape.

They disappear in 48 hours after birth.

2. *Changes in skull. (Equitation.)*

From the mobility of the bones through the sutures the frontals and occipital are over-ridden by the parietals, while the posterior parietal is pressed beneath the anterior. Thus when L. O. A. the left parietal is underneath the right, which, with the caput on it, gives the head a most unequal appearance. Thus from the shape of the head the position of the presentation can be told with great certainty.

3. *Cephalhæmatoma*

Is an effusion of blood between the bone and pericranium. It is usually found on one or both parietal bones, and forms a fluid swelling limited to the area of the bone. It increases in size for the first few days after birth, and remains thus for some weeks, when it is usually absorbed.

It resembles somewhat a meningocœle, but can usually be distinguished by its site (meningocœles being very rare on the parietal region), and also that there is no impulse imparted to the tumour when the child cries.

These swellings should never be interfered with, unless they suppurate, when they require antiseptic incision and drainage.

Mechanism of Occipito-Posterior Positions of Vertex

Three varieties.

1. Rotation forward of occiput to behind symphysis.
2. Rotation backward of occiput into hollow of sacrum.
3. Fixation on ischial spines.

The essential for forward rotation of the occiput is extreme flexion.

The second stage is usually delayed from the long rotation, but the labour is otherwise normal.

When rotation backward occurs the condition is called a "face to pubes" case. Spontaneous delivery in these cases is the exception. Thus when met with forceps should be applied at once.

When jammed on ischial spine, forceps are also indicated, as severe compression of the posterior vaginal wall, with subsequent sloughing results, if labour be long delayed. When a slough is formed it usually separates on the fourth or fifth day of puerperium, and gives rise to retention of urine at this time.

CHAPTER X.

Management of Normal Labour and Puerperium.

General Rules.

Attend at once.

Be above all things cleanly and aseptic. Never introduce anything into the vagina which has not previously been rendered aseptic as far as possible.

If engaged before confinement, make arrangements as to female attendant being also present; make inquiries as to previous confinements, if multiparæ.

Contents of Midwifery Bag.

1. Higginson's syringe.
2. Antiseptic pellets ($HgCl_2$).
3. Nail brush.
4. Catheter.
5. Scissors.
6. Curved needles and silkworm gut.
7. Chloroform.
8. Carbolated vaseline 1·20.
9. Ergot.
10. Forceps.

On Arrival.

1. Question patient as to—

a. Pains.
Period of onset.
Character.
Seat.

b. Escape of waters.

2. Make examination—
1. Vaginally.
2. By external palpation, if position cannot be made out vaginally.
3. Auscultation, to learn if child is living.

Points to be made out by examination.

a. Is she pregnant?
b. Is child alive?
c. Is she in labour?
d. What stage, and how far on in it?
e. Presentation.
f. Position.
g. Condition of membranes.
h. State of canals.

Examine vaginally between pains, but if painful and difficult, during pain, and continue after pain ceases.

3. After examination.
If all is right, say so to patient.
If any abnormality, do not inform patient, but tell friends.
Do not risk prognosis of time labour will occupy to patient.

4. See that attendant has necessaries ready, viz.—
a. Plenty of hot water in case of hæmorrhage
b. Ligatures for cord.
c. Binder

d. Bed.

(1) In proper position.

(2) Mattress covered by mackintosh to prevent soiling.

5. Order enema to be given.

Castor oil, ℥ss.

Olive oil, ℥j.

Hot water, a breakfastcupful.

MANAGEMENT OF FIRST STAGE.

If os uteri less than crown piece, leave house, and if at night, request them to send when pains are stronger or membranes rupture; if during the day, call again in a few hours.

If os uteri larger than crown piece, stay in house, but not in patient's room; make periodic visits.

If os uteri less than crown piece, let patient walk about.

Let her cry out, but do not encourage straining during pains.

Examine as seldom as possible.

After rupture of membranes dangers commence.

If delay in this stage, put patient in dorsal position and apply binder.

MANAGEMENT OF SECOND STAGE.

a. Head in pelvis.

1. Keep patient in bed lying on left side.
2. Examine whenever membranes rupture—

To make out position more definitely.

In case of any complication (prolapsus funis, etc.).

3. Repeat examinations every half-hour.

4. Tell patient to strain during pains, and not cry out.
5. Let attendant alleviate suffering by "holding patient's back."
6. Give chloroform if pain severe. Give during pain only. Partial anæsthesia alone necessary.

b. Head at vulva.

7. Now most painful, therefore increase anæsthesia, but not to surgical extent.
8. Do not support perinenm; if rigid, apply oil and warm cloths.
9. Put pillow between knees.
10. Receive head in right hand, and place the left over fundus uteri.
11. If cord round neck, slip it over occiput.
12. Do not hurry birth of trunk; if delay, express, but do not pull on head.
13. Follow fundus uteri down with left hand during expulsion of trunk; thus hæmorrhage is prevented, and twins are diagnosed.

After Birth of Child.

If no hæmorrhage, give uterus to attendant to hold, and attend to child.

Before tying cord—

Try to make child cry.

Wait till pulsation ceases.

Tie at two places, two and four inches from child respectively, and cut between.

Examine fœtal end, and if no hæmorrhage, hand child to nurse and attend to mother.

MANAGEMENT OF THIRD STAGE.

1. Examine perineum for laceration; and if extensive, stitch at once.
2. Feel pulse, and give stimulant if required.
3. Knead uterus gently, when, probably in the course of a few minutes, it will contract and expel placenta.
4. If not expelled in fifteen minutes, compress uterus firmly, and press it downwards and backwards. (Credé.)
5. Placenta will thus probably be expelled at least into vagina; if this be so, fundus uteri will now be below umbilicus.
6. If placenta in vagina, introduce fingers and hook it out.
7. After extrusion from vulva, twist so as to get membranes away entire; do not pull.
8. If placenta remain in uterus over an hour after compression has been tried, introduce hand and scrape it out.
9. Never try to pull by cord.
   a. Cord breaks.
   b. Inversion of uterus apt to occur.
10. Hold on to uterus ten minutes after birth of placenta.
11. Now float placenta in basin of water, to see if expelled entire, with membranes.

AFTER-TREATMENT.

1. Make attendant give antiseptic vaginal douche, and make patient clean and comfortable, and apply diaper to vulva.

2. After half an hour, if uterus well contracted (cricket ball), apply binder.
3. See that binder passes below trochanters ; apply tightly at this point and over fundus, but slackly above.
4. Let her now have some slight nourishment and rest.
5. Wait half an hour longer before leaving house ; and before doing so, see all is right.
6. Return in twelve hours ; and on return inquire after *micturition*.

If cannot pass water, draw it off.
Take pulse and temperature.
Tighten binder, and ascertain if uterus contracted.
Inquire if any pain.

MANAGEMENT OF PUERPERIUM.

1. Call daily for five days ; then, if all well, every other day till tenth day.
2. Inquire as to lochia, micturition, pains.
3. Diet for first two days, chiefly milk ; after that, as usual, with much milk.
4. Order aperient after forty-eight hours (Henry's solution, ℥ss.; castor oil, ℥ss.).
5. Pay special attention to pulse and temperature.

Temperature under 100° F. for first three days is good.
After this, should be normal.
If temperature rises at night, do not let patient rise, as parametritis is probably present.
Pulse most important indicator.
Generally slower than usual.

If maintained above 100, something wrong.

6. Note rate of uterine involution.
7. Alleviate pain and fulness in breasts by rubbing with warm oil.

   Put child to breast whenever milk for it.
8. If after-pains severe. treat by aperient and $\frac{1}{4}$ grain morphia suppository.

   If after-pains present in primiparæ, with abundant lochia, probably something retained in uterus ; if without lochia, probably inflammation.

   If pain constant, not due to after-pains.
9. If lochia too profuse, probably something in uterus, therefore compress.

   Note involution of uterus.

   If lochia suddenly cease, sign of inflammation.
10. Keep in bed till tenth day at earliest.

    Results of early rising.

    Subinvolution.

    Displacements.
11. Do not allow patient out of house till middle of third week

CHAPTER XI.

Laborious Labour.

Where vertex presents, but labour is not completed within 24 hours.

Assistance is frequently called for before this, thus classification is arbitrary.

Delay may be due to faults in the powers, passages, or passenger, and may occur in any stage.

Causes of Delay in First Stage.

In Passages, due to—

1. Rigid Cervix. { Simple. / Organic. / Spasmodic. } { Inflammatory. / From hypertrophy. / Malignant disease
2. Atresia Cervicis.
3. Obliquity of Uterus. { Anterior displacement. / Posterior displacement.
4. Impaction of Cervix.

In Passenger, due to

1. Liquor Amnii. { Excess. / Absence. / Early escape.
2. Membranes. { Adhesion to lower uterine segmen / Sausage-shaped presentation.

If labour seriously delayed, patient suffers from exhaustion, thready pulse, cold sweats, even delirium, and sometimes dies.

Mortality is four times greater if labour extends over 24 hours.

Mortality is twelve times greater if labour extends over 36 hours.

Delay in First Stage.

Seldom due to powers. Their description will therefore be considered under Second Stage.

Due to Passages :—

I. Rigidity of Cervix.

a. Simple rigidity.

Met with in primiparæ chiefly, and is most prone to occur if elderly.

If met with in multiparæ, is called spasmodic.

Diagnosis.

Edge of cervix thin but regular in outline.

Treatment.

1. Chloral, 15 grs. repeated in three hours.
2. Morph. suppository, gr. $\frac{1}{4}$.
3. If these without benefit, chloroform anæsthesia is often efficacious.
4. Artificial dilatation with finger.

This is performed by putting patient deeply under chloroform and sweeping finger round edges of os uteri between membranes and cervix.

Barnes' bags are also recommended.

b. Organic rigidity.

Generally due to cervicitis, the result of previous lacerations.

May be due to malignant infiltration.

Diagnosis.

Edges of cervix thick, hard, and irregularly dilated.

Treatment.

As in simple, but hot douching is in these cases most beneficial.

II. Obliquity of Uterus.

Anteversion or pendulous belly prevents powers acting in proper axis.

Treatment.

Put patient on back and apply tight binder, which retains uterus in proper axis.

III. Occlusion of Os Externum.

This may be a simple gluing of lips, or due to cicatricial adhesion.

Treatment.

If indentation to be felt, push sound through it, and dilate with fingers.

If none, incise with knife, and enlarge incision with fingers.

Danger.

Rupture of uterus.

IV. Impaction of Anterior Cervical Lip.

Often caused by anteversion, but may occur independently.

Treatment.

Treat anteversion if present. Push lip up during pains. Anæsthesia is generally indicated as this manipulation is painful.

FAULTS IN PASSENGER.

I. LIQUOR AMNII.

Excess, absence, or early escape.

a. Excess.

A very common cause.

Prevents contractions and over-distends lower uterine segment. May usually be recognised by feeble pains occurring after lengthy intervals.

Treatment.

Rupture membranes.

b. Absence.

Liquor amnii may be deficient, or forewaters only absent.

Causes delay by absence of fluid wedge.

Treatment.

Push head up to let forewaters down if any liquor amnii.

If none, rupture membranes and let head down to act as dilator.

c. Early Escape.

Due to

1. Thin membranes.
2. Forcible examination.
3. Contracted pelvis and malpresentations.

II. ADHESION OF MEMBRANES TO LOWER UTERINE SEGMENT.

Treatment.

Separate with finger as in artificial dilatation

III. SAUSAGE-SHAPED PRESENTATION OF MEMBRANES.

Due to presenting part not being closely grasped by uterus, and thus failing to form a plug whereby

the forewaters are cut off from the general amniotic cavity and its contents.

This is chiefly met with therefore in contracted pelves and malpresentations.

When presenting thus, early rupture is the usual sequence.

General Rules for Management of Delayed First Stage.

I. Membranes Intact.

a. If pains slight and infrequent, give opium or chloral; no danger.

b. If pains severe and exhausting, give opium chloral or chloroform to give patient rest; if unsuccessful, artificial dilatation must be commenced.

c. Preserve forewaters as long as possible, unless delay due to excess of liquor amnii.

II. Membranes Ruptured.

a. If no pains, leave alone indefinitely.

b. If pains slight, give sedatives which usually temporarily inhibits them and thus rests patient.

c. If pains continue, do not wait many hours, as injurious compression of the soft parts is liable to occur.

d. If "retraction ring" can be felt above symphysis pubis, commence artificial dilatation at once, as rupture of uterus is imminent.

CHAPTER XII.

Laborious Labour.

Causes of Delay in Second Stage.

I. *In Powers.*

1. Inertia uteri.
   - Constitutional.
   - From exhaustion.
   - Disease in walls.
   - Over-distention.
2. Irregular uterine contractions.
3. Inefficiency of secondary powers.

II. *In Passages.*

1. Rigidity of soft parts.
   - Vagina.
   - Perineum.
2. Rectum, distension of.
3. Bladder.
   - Distension.
   - Prolapse.
   - Calculus.
4. Hernia of intestines.
5. Ovarian and parovarian tumours.
6. Tumours of soft canals.
   - *a.* Of cervix.
     - Fibroids.
     - Polypi.
     - Malignant.
   - *b.* Of vagina.
     - Cysts.
     - Fibroids.
     - Malignant
     - Inflammatory.
     - Hæmatic.
   - *c.* Of vulva.
     - Hæmatic.
     - Malignant.
     - Abscess.
     - Cysts.
7. Tumours of hard pelvis.
8. Contracted pelvis.

III. *In Passenger.*

1. Toughness of membranes.
2. Large size of head.
   - Natural.
   - Unnatural.
3. Shortness of umbilical cord.
   - Actual.
   - Acquired.
4. Malformation of fœtus.
5. Malposition of vertex.
6. Prolapse of arm or head.

DELAY IN SECOND STAGE.

DUE TO POWERS:—

I. INERTIA UTERI.

a. Causes. Constitutional, from

1. General debility.
2. Too frequent pregnancies.
3. In very young and elderly.
4. Mental shock.

b. Secondary exhaustion, the result of delay from other causes.

c. Tumours of uterine wall.

d. Over distension, from

1. Twins.
2. Hydramnios.

Treatment.

1. Give opium to secure absolute rest for a short time if no signs of pressure, such as œdema of vulva or vaginal walls.
2. If pains do not now return strongly, assistance is needed.

a. By drugs.

Not to be highly recommended.

Quinine, 5 grs., alone safe.

Ergot must specially be avoided, because it causes tonic contraction of uterus, which, if obstruction be present, exhausts mother, arrests placental circulation, and may cause rupture.

b. Supra-pubic pressure.

With hand placed over fundus uteri, press firmly in axis of pelvic brim

during pains, and, if none, at intervals.

c. Hot vaginal injections.

d. Forceps.

In multiparæ apply if second stage delayed beyond two and a half hours.

In primiparæ, wait three and a half hours.

II. Irregular Uterine Contractions.

Due to

Disease in walls.

Exhaustion.

Full rectum or bladder.

They are extremely painful.

Treatment.

See that bowels and bladder are empty. Give chloroform, chloral, or opium.

III. Delay due to Secondary Powers.

1. From paralysis of abdominal muscles.
2. Pain from peritonitis, full bladder, etc.
3. Distension of abdomen, from
   a. Ovarian tumours.
   b. Ascites, etc.
4. Chest affections by preventing fixation of diaphragm.

Delay due to Passages :—

I. Rigidity of Soft Parts.

Vagina, perineum, vulva.

Causes.

1. Tonic rigidity from want of vital dilatation in primiparæ, and premature labours. Parts hot and dry.

2. Secondary rigidity, from long labours. Parts hot, dry, and congested.
3. Malformation of vagina and hymen.
4. Old cicatrices, ulcerations, etc.

Treatment.

Vaginal.

Hot douching.

Incise cicatrices, etc., during pain.

Examine as seldom as possible.

Perineum.

Hot fomentations.

Carbolic oil.

Deep anæsthesia causes relaxation.

Forceps.

In using them the greatest caution is necessary to prevent tearing perineum.

Varieties of Torn Perineum.

1. Partial.
2. Complete.
3. Central.

Partial, where tear does not extend through sphincter ani.

Complete, where tear extends into rectum.

Central, extremely rare, a button-hole opening being formed in perineum.

If perineum torn.

Stitch immediately after child is born with deep sutures of strong catgut.

Do not pull stitches very tight; by this means much unnecessary pain is saved and inconvenience avoided.

Tight stitches are a common cause of urinary retention.

It is unnecessary to wait till placenta is born before stitching, therefore do it at once after birth of child while patient is under anæsthetic.

Catgut is best suture, as it saves the inconvenience of subsequent removal.

II. Distension of Rectum.

A most potent cause of delay, but should never occur if rule 5 of management be attended to.

III. Distended Bladder.

Prevents secondary powers acting. May prolapse before head, and may thus be mistaken for impacted anterior lip of cervix.

Treatment.

Draw off the urine; pass male catheter far in, as bladder is pulled up during second stage, and urethra elongated.

IV. Vesical Calculus.

Extremely rare. Recognised as a hard mass felt through anterior fornix, movable between pains.

Treatment.

Removal by incision, or through urethra, if small.

V. Enterocœle.

Hernia into pouch of Douglas.

Forms prolapsed gurgling mass through posterior vaginal wall.

Treatment.

Try taxis, with patient in genu pectoral position.

If cannot reduce, deliver at once, and remove pressure.

VI. Prolapse of Anterior Vaginal Wall.

Frequently associated with full bladder.

Treatment.

Draw off urine, if any, and if swelling remains, push up between pains. (Anæsthesia greatly assists this manipulation.)

VII. Ovarian and Broad Ligament Tumours.

Affect labour differently, according to size.

If large and abdominal,

1. Prevent secondary powers acting.
2. Change axis of uterus.

If small and pelvic,

Prolapse before head, and block passages.

Dermoids are most frequently found in this situation.

Diagnosis.

1. If large,

   Double abdominal tumour.

2. If small and pelvic,

   Soft mass bulging vaginal wall in front of presenting part.

Prognosis.

If large, favourable.

If small, grave, from

1. Rupture of tumour.
2. Rupture of uterus.

3. Crushing of tumour, with subsequent peritonitis.
4. Exhaustion from delay.

Treatment.

If large and abdominal, forceps.

If small and pelvic,

1. Try to push it out of pelvis between pains, patient in genu pectoral position.
2. If irreducible, aspirate if cystic ; incise, and evacuate into vagina if solid.
3. If still too large,

Craniotomy or Cæsarian section may be required.

VIII. Tumours of Soft Canals. (*See* Table. Page 101.)

General Treatment.

If intra vaginal, remove or evacuate, according to consistence.

If external to canals, forceps, embryulcia, or Cæsarian section must be selected, according to degree of encroachment. (*See* page 114.)

In hæmatomata, it is well, if possible, to avoid opening or laceration, on account of hæmorrhage.

Abscesses should be thoroughly evacuated, and rendered aseptic as far as possible, before labour is due.

Delay Due to Passenger :—

I. Toughness of Membranes.

A common cause, occasionally the bag of forewaters may protrude from the vulva. There-

fore the membranes should always be ruptured when full dilatation of the cervix is completed.

Rupture should be performed during a pain, by means of finger nail or quill passed along uterine sound.

In rare cases the head may be born enveloped in the membranes. This is named "born with a caul," and is popularly supposed to be a sign of luck.

II. Large Size of Fœtal Head.

a. Natural.

1. From premature ossification.
2. From protracted gestation.
3. In large fœtus.

The mechanism is analogous to that of a normal-sized head in a justo-minor pelvis, viz. extreme flexion.

b. Unnatural (hydrocephalus).

Due to intra-cranial serous effusion.

Occurs 1 in 3000 labours.

Diagnosis.

Varies according to degree of ossification of vault.

If ossification slight,

The wide sutures, large fontanelles, and thin bones can be made out specially during the interval of pains. During pains the presenting head becomes very tense. It may be mistaken for encephalocœle.

If ossification advanced,

The bulging forehead, and disproportion between head and face associated with the large intra-uterine mass by external palpation, are the chief means at disposal. No part of the head enters the pelvis.

Danger.

Rupture of the uterus from inability of cervix to become retracted over large head. Sixteen in seventy-four cases.

Treatment.

Puncture head, and turn, if practicable.

If not, extract by cranioclast.

Hydrocephalic fœtuses frequently present by the breech, which is usually withered and ill-developed.

III. Shortness of Umbilical Cord.

Actual.

Rare under eight inches.

Acquired.

From coiling round fœtus.

Dangers.

Inversion.

Early separation of placenta.

Rupture of cord.

Treatment.

Cut cord, if accessible, and deliver rapidly.

IV. Malformation of Fœtus.

Spina bifida.

Hydrothorax.

Ascites.

Distended bladder or cystic kidneys.

Tumours.

Treatment.

If cause of delay after head born, make out by external palpation.

Perforate any part within reach, per vaginam.

V. Prolapse of Hand or Arm below the Vertex.

Treatment.

If at side of head, the prolapsed member is usually easily replaced, but if across back of head, this is difficult, and as it seriously impedes labour, turning should be adopted.

CHAPTER XIII.

Contracted Pelves.

For obstetrical purposes the normal true pelvis is divided into a brim, cavity and outlet; their respective diameters are carefully measured, thus—

Internal Diameters of True Pelvis.

	Conjugate.	Oblique.	Transverse.
Inlet,	4 in.	$4\frac{1}{2}$ in.	5 in.
Cavity,	$4\frac{1}{2}$ „	$4\frac{1}{2}$ „	$4\frac{1}{2}$ „
Outlet,	5 „	$4\frac{1}{2}$ „	4 „

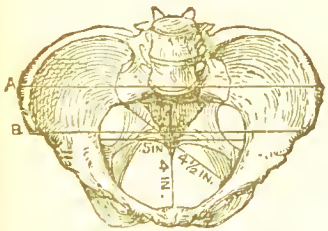

Fig. 4. *Normal Pelvis*, showing measurements of internal diameters at brim. Conjugate, 4 inches; oblique, $4\frac{1}{2}$ inches; transverse, 5 inches. A, intercristal. B, interspinous diameters.

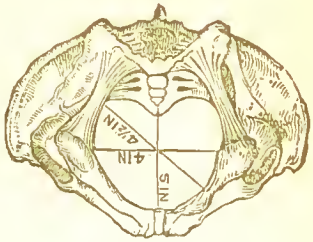

Fig. 5. *Normal Pelvis* from below, showing diameters of outlet. Conjugate, 5 inches; transverse, 4 inches; obliques, $4\frac{1}{2}$ inches.

Diagonal conjugate, $4\frac{3}{4}$ (measured from lower border of symphysis to sacral promontory).

External Diameters and their Measurements.

Ext. conjugate, $7\frac{1}{2}$ in.
Interspinous, $9\frac{1}{2}$ „
Intercristal, $10\frac{1}{2}$ „

Depth

Posteriorly, 5 in.
Anteriorly, $1\frac{1}{2}$ „

Position of Pelvis in Erect Posture.

Sacral promontory, $3\frac{1}{2}$ inches above upper border of symphysis pubis.

Coccyx, $\frac{1}{2}$ inch above lower border of symphysis.

The plane of the brim is thus at an angle of 60° to the horizon, and the axis of the brim may for practical purposes be considered and represented by a line from the umbilicus to tip of the coccyx.

The axis of outlet with soft parts in situ is at right angles to axis of brim.

The axis of the cavity must thus be represented by a curve (curve of Carus).

A knowledge of the axes of the pelvis is of the utmost importance.

Pelvic contraction is usually met with at the brim, but may co-exist in the cavity and outlet.

General Effects of Contracted Pelvis.

1. *On Pregnancy.*

Tend to cause uterine displacement, thus—

"Pendulous belly" is a characteristic sign of a contracted pelvis in primiparæ.

2. *On Presentation.*

Preternatural presentations are three times more frequent, due to inability of head to

become accommodated to ovoid of lower uterine segment, which under normal conditions is within the pelvic brim.

3 *On First Stage of Labour.* (Delayed.)

a. Membranes apt to present sausage-shaped.

b. Early rupture from inability of head to get down and form plug between liquor amnii and forewaters.

c. Entire escape of liquor amnii.

d. Excessive retraction of cervix, which predisposes to uterine rupture.

4. *Second Stage of Labour.* (Delayed.)

5. *Mechanism of Labour Materially Changed,* but varies according to type of contraction (which *see*).

Prognosis.

To mother.

Mortality increased. This varies according to degree.

Due to

1. Exhaustion.
2. Rupture of uterus.
3. Sloughing of soft parts from pressure.
4. Necessary artificial aid.

To child. Very grave, from

1. Faulty presentations.
2. Entire escape of liquor amnii.
3. Prolapsus funis.
4. Artificial delivery.

Diagnosis. (General.)

1. History of previous labours in multiparæ.
2. Abnormal prominence of abdomen in primiparæ.

3. Inaccessibility of lower uterine segment, and presenting part per vaginam.
4. Position of head at brim.

   Varies according to type of pelvis, but seldom is the occipito-frontal found in the oblique diameter parallel with the plane of brim.
5. *Diameters of Pelvis Shortened.*

   The two measurements most useful and most conveniently taken are the diagonal conjugate and the interspinous.

   The former is normally $4\frac{3}{4}$ inches, being the distance between the sacral promontory and sub-pubic arch, and can be easily measured with the fingers in the vagina. From it the length of the true conjugate is derived by subtracting $\frac{3}{4}$ths of an inch.

   The interspinous diameter, normally $9\frac{1}{2}$ inches between the anterior superior iliac spines, is only to be estimated by calipers, and from it an approximate idea of the transverse diameter at the brim may be gauged by subtracting 5 inches. The relation between the interspinous and intercristal is of importance in recognising rachitic pelvis. There is normally 1 inch of difference in their length.

General Treatment of Contracted Pelvis.

Conjugate.

4 to 3 inches.	Forceps.
$3\frac{1}{4}$,, $2\frac{3}{4}$,,	Symphyseotomy or induce premature labour.
3 ,, 2 ,,	Craniotomy.
Below 2 ,,	Cæsarian section.

In flat pelves, with a conjugate diameter at the brim between $2\frac{3}{4}$ and $3\frac{1}{2}$ inches, turning used at all times to be adopted. (*See* page 119.)

The various methods of treatment thus broadly recommended are made to overlap, as they differ according to the relative length of the transverse. Thus in a pelvis with conjugate vera of $3\frac{1}{4}$ inches and a transverse of 5 inches, forceps might be used, while, if the transverse were but $4\frac{1}{4}$ inches, premature labour would be preferable.

TYPES OF CONTRACTED PELVES.

I. *Symmetrically Contracted.*
Æquabiliter justo minor.

II. *Flattened.*
a. Rachitic.
b. Non-rachitic.

III. *Combinations of I. and II.*

IV. *Irregularly Contracted.*
a. Without spinal deformity.
1. Osteomalacic or malacosteon.
2. Pseudo-osteomalacic (rachitic).
b. From spinal deformity.
1. Lordosis.
2. Scoliosis.
3. Kyphosis.
4. Spondylolisthesis.

V. *Non-Developed Pelves.*
1. Roberts' (transversely contracted).
2. Naegele's (obliquely contracted).
3. Funnel-shaped (masculine).

I. Pelvis Aquabiliter Justo-minor.

Is simply an undersized pelvis, all the diameters of brim, cavity, and outlet being equally contracted.

Effect on Mechanism.

Causes marked flexion of head if presenting. This corresponds exactly with the mechanism of a large well ossified head in a normal pelvis.

Diagnosis.

All diameters shortened.

Interspinous and intercristal diameters shortened, but have normal relation to one another.

Head presents at brim markedly flexed, the posterior fontanelle being almost in the axis.

Treatment.

If delay, forceps.

II. Flat Pelves.

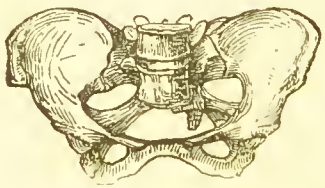

Fig. 6. *Flat Pelvis.*

Are characterised by a diminution of the conjugate, with relative increase in the transverse diameters of the brim.

They are of two varieties—rachitic and non-rachitic.

Non Rachitic Flat.

Is the more common type.

It is the result of a sinking forward of the sacrum *en masse*, and thus is characterised by a diminution in the conjugate diameters of brim, cavity, and outlet, with relative increase of the transverse.

Extreme contraction is uncommon.

Rachitic Flat.

Is due to a rotation of the sacrum on its transverse axis, so that the promontory is approximated to the symphysis pubis.

It is thus specially characterised by diminution of the conjugate at the brim only, all the other diameters being increased.

Being due to softening of the bones from rickets, some minor characteristics are present, principally,

1. Flattening of ilia so that the interspinous equals the intercristal diameters in length.
2. Flattening of sacrum transversely.

The rachitic and non-rachitic resemble one another in

1. Diminution of conjugate at brim.
2. Increase of transverse throughout.
3. Wide pubic arch.

They differ chiefly—

Rachitic.

1. Increase of all diameters except conjugate at brim.
2. Relative increase of interspinous to intercristal diameters.
3. Flattening of sacrum transversely.

Non-Rachitic.

1. Diminution of all conjugates.
2. Normal relationship of intercristal and interspinous.
3. No flattening of sacrum.

Special Effect on Mechanism.

Head enters brim.

1. With occipito-frontal diameter in transverse of pelvis.
2. With anterior fontanelle on same level, or lower than posterior, *i.e.* extended instead of flexed. This allows the broad transverse diameter (bi-parietal) to pass at one side of the diminished conjugate.
3. With anterior parietal bone lower than posterior (Naegele's obliquity). By so tilting, the anterior parietal bone passes through brim before the posterior.

After passing brim in rickety flat, labour is quickly completed, as the other diameters are increased.

In the non-rachitic type, however, much delay is still occasioned by the diminished conjugate of cavity and outlet.

From the increase of the transverse diameters, internal rotation is frequently absent till vertex reaches vulva, the long diameter of the head being born in the transverse of outlet.

Diagnosis.

Diminution of conjugate.

Wideness of pubic arch.

Transverse position of extended head, the fontanelles being felt on same level.

Treatment.

Forceps.

Before axis traction forceps were adopted, turning was the usual method of treatment. Many still decry forceps, basing their argument on the theory that an antero-posterior grip of the head by the forceps causes an increase in the transverse. This is not so, however, as the compensatory increase takes place in the vertical (cervico bregmatic) diameter. By the use of forceps, therefore, greater safety to the child is assured, as the necessary delay to the birth of the head after turning is a frequent cause of mortality to the fœtus.

III. Malacosteon or Osteomalacic Pelvis.

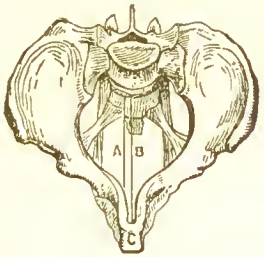

Fig. 7. *Malacosteon Pelvis.*

A Available conjugate. B Anatomical. C Beak-shaped symphysis.

An irregularly contracted pelvis due to softening of the bones (osteomalacia).

Development.

As the weight of the body when standing is transmitted from the vertebral column to the heads of the thigh bones through the pelvis, the latter will, if softened, become much compressed and distorted. The contraction will naturally be most marked in the transverse diameter from the heads of the femora driving in the lateral pelvic walls. At the same time through sitting, the sacrum will be compressed vertically, the tip of the coccyx being driven upwards and forwards and the promontory downwards.

The chief characteristics of the deformity will thus be—

1. Transverse diameters all diminished.
2. Anatomical conjugate (B) at brim lengthened; available conjugate diminished (A). (Fig. 7.)
3. Pubic arch narrowed (beak-shaped).
4. Outlet diminished in all diameters.
5. Sacral concavities increased.

Differences between Malacosteon and Rachitic Flat Pelvis.

	MALACOSTEON.	RACHITIC FLAT.
Brim.		
1.	Transverse contracted.	1. Transverse relatively lengthened.
2.	Conjugate lengthened.	2. Conjugate shortened.
3.	Shape Y.	3. Shape kidney.

	MALACOSTEON.	RACHITIC FLAT.
Cavity and Outlet.		
1.	All diameters diminished.	All diameters increased.
2.	Arch Narrowed. Beak-shaped pubes.	Widened.
3.	Sacrum. More concave.	Flattened transversely.
4.	Interspinous. Less than intercristal diameter by at least an inch.	Diameters approximate.

Treatment.

According to degree of deformity (see table, page 114).

IV. PSEUDO-OSTEOMALACIC PELVIS.

Is a rachitic flat pelvis, plus osteomalacic characteristics. May be due to rickets prolonged during child life, after child can stand or walk, or to osteomalacia occurring in a pelvis previously flattened by rickets.

V. KYPHOTIC PELVIS.

This deformity is due to the weight of the body being carried to the base of the sacrum in such a manner as to rotate it backwards on its transverse axis. Thus,

1. The conjugate at brim is increased.
2. The transverse throughout diminished.
3. All diameters of outlet contracted.

It is thus the exact converse of the rachitic flat pelvis, and the delay to the passage of the child is most marked at the outlet of the pelvis.

VI. Lordosis.

Undue prominence of lumbar convexity preventing entrance of presenting part into pelvic brim.

VII. Scoliosis.

Lateral obliquity of lumbar vertebrae causing asymmetry of pelvis from encroachment on oblique diameters of brim.

VIII. Spondylolisthesis.

Due to disease of lumbo-sacral joint in which the lumbar vertebrae fall in front of sacral promontory and diminish conjugate diameter of brim.

IX. Naegele's Pelvis.

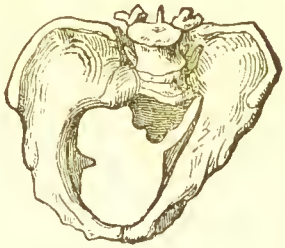

Fig. 8. *Naegele's Pelvis.* Left ilium undeveloped.

An obliquely contracted pelvis due to want of expansion in one iliac bone, and frequently the result of sacro-iliac joint disease causing ankylosis. Resulting in diminution

1. Of transverse diameters.
2. Of oblique diameter corresponding to developed side of pelvis; thus if right iliac bone developed, right oblique is contracted. (Fig. 8.)

X. Roberts' Pelvis. (Fig. 9.)

Is the result of non-expansion of both iliac bones. It retains, therefore, the infantile shape, viz. transversely contracted.

XI. Funnel-shaped Pelvis.

Also called masculine pelvis.

Characteristics.

1. Normal brim.
2. Increased depth.
3. Transversely contracted at outlet from convergence of ischia.

Fig. 9. *Roberts' Pelvis.*

4. Sacrum but slightly curved.
5. Pubic arch narrowed.

Effect on Mechanism.

Delay at outlet.

Treatment.

Forceps.

CHAPTER XIV.

Preternatural Labour.

Face Presentations.

Occur 1 in 250 labours.

May be *primary* or *secondary*.

Primary before labour commences—rare.

Secondary formed after labour commences.

From marked extension of head instead of flexion in vertex presentation.

Causes.

1. Prevention of approximation of chin to sternum, from
   a. Coils of cord round neck.
   b. Enlarged thyroid.
   c. Intervention of arms between chin and sternum.
2. Excess of liquor amnii.
   This causes extreme mobility of head above brim from globular shape of lower uterine segment. The occiput may thus impinge on pelvis, and be prevented from descending.
3. Flat pelvis.
4. Obliquity of uterus.

5. Big chest.
6. Dolico cephalic head.

Is more probably the result than cause.

Positions.

These are named according to position of chin (mentum), which is the denominator.

Being in the large majority of cases due to extension of vertex presentations (secondary) they are named first, second, third, and fourth. according to the vertex presentation from which they are derived.

Thus, if in a vertex L.O.A. the head extends and the face presents, the chin will be posterior and opposite the right sacro-iliac joint, and the position will be named. Right mento posterior or first face position. In like manner, we get from

R.O.A. Left mento-posterior, second position.

R.O.P. Left mento-anterior, third position.

L.O.P. Right mento-anterior, fourth position.

In all the above positions the fronto-mental diameter occupies the same position as the occipito-frontal in vertex cases.

NORMAL MECHANISM.

1. Marked extension and descent of chin.
2. Rotation forwards of chin to behind symphysis.
3. Flexion. The chin becomes fixed beneath pubic arch, and the face, forehead, sinciput, and occiput pass successively over perineum and head is born.
4. External rotation as in vertex cases.

Diagnosis.

1. If seen early, easy. The characteristic landmarks being
    1. The orbits.
    2. Mouth with gums.
    3. Anterior fontanelle.
2. If seen late after membranes have been ruptured for some hours, the large caput succedaneum so modifies the face that it may be mistaken for the breech. They can at once be differentiated by abdominal palpation from the position of the hard head, which, in breech cases, is to be felt at the upper pole of uterus.

Effect on Labour.

1. *Tend to Delay First Stage.*
    a. From face forming an inefficient plug to liquor amnii, and thus membranes present frequently in sausage-shaped form and rupture early.
    b. If membranes rupture early the flat face forms but a feeble dilator to cervix.
2. *Causes of Delay in Second Stage.*
    a. The flat face forms an inefficient dilator of passages.
    b. The neck and upper part of chest must engage in pelvis before face can be born.
    c. Mento-posterior cases being most common, there is a long internal rotation.
    d. The chin in mento-posterior cases may

rotate backwards into hollow of the sacrum, and if this occurs spontaneous delivery is almost impossible.

Management.

General rules.

1. Be careful in examining vaginally not to injure child's eyes.
2. Preserve membranes if possible till full dilatation of cervix, thus attempt to make diagnosis vaginally only between pains.

Special Rules.

If *multiparæ*, leave alone, and, if much delay, assist with forceps.

If *primiparæ*, and position mento-*anterior*, do likewise; but if mento-*posterior*, turn, because the chin frequently rotates backwards; and if so, forceps are usually insufficient, and craniotomy is required to deliver child.

Prognosis.

To Mother.

Favourable.

To child.

Grave. 13 per cent. born dead.

1. From delayed labour.
2. From compression of head

The child when born usually presents an unsightly appearance from the swelling of the face and the elongation of

its head; this disappears in a few days. It should be kept as long as possible from maternal inspection.

BROW PRESENTATIONS.

Intermediate between vertex and face presentations.

Causes.

Same as face.

Diagnosis.

The prominence of the forehead, with orbits on one side of it, and large anterior fontanelle on other.

Mechanism.

1. May flex and form vertex presentation.
2. May extend and form face.
3. May be born as brow; if so, the forehead rotates to the front, and, with superior maxilla resting behind symphysis, the cranial vault passes over perineum, followed by the upper jaw, mouth, and chin successively gliding beneath pubic arch.
4. If forehead rotates backwards, spontaneous delivery is impossible.

Prognosis.

To mother.

Mortality increased from delayed labour, due to longest diameter (fronto-mental) engaging and passing through pelvis.

To child.

Grave. Mortality, 18 per cent.

Management.

1. If met with early, try and convert into vertex presentation by pushing up face during a pain; if this be of no avail and position mento-anterior, try to convert into face case by pushing up occiput. If this be unsuccessful, turn.
2. If labour far advanced and brow irreducible, leave alone so long as safe to mother, then apply forceps; if mento-posterior, rotation of the chin must be first accomplished forwards, before delivery by forceps can be completed.
3. If chin has rotated backwards, craniotomy is almost a *sine quâ non*.

CHAPTER XV.

Pelvic Presentations.

Include breech, footling, and knee presentations.

Frequency.

Breech, 1 in 40.
Footling, 1 in 74.
Knee extremely rare.
} Gross, 1 in 33.

Causes.

1. Anything which destroys normal ovoid shape of uterus, as
   - *a.* Excess of liquor amnii.
   - *b.* Contracted pelvis.
   - *c.* Tumours of uterine wall.
2. Twins.
3. Hydrocephalus.
4. Monsters.
5. Death of fœtus.
6. Prematurity.
7. Placenta prævia.

Positions.

According to position of sacrum, which is the so-called "denominator."

They are numbered as in vertex cases, the sacrum exactly corresponding to the occiput.

They are named,

1. Left sacro-anterior, L.S.A. 1st position.
2. Right sacro-anterior, R.S.A. 2nd „
3. Right sacro-posterior, R.S.P. 3rd „
4. Left sacro-posterior, L.S.P. 4th „

Diagnosis.

1. By external palpation.
   The hard head can be felt at upper pole of uterus.
2. By auscultation.
   Fœtal heart heard with greatest intensity above umbilicus.
3. Per vaginam.
   a. Soft presenting part.
   b. Tip of coccyx, anus, ischial tuberosities.
   c. Fold of groin.
      This may be distinguished from axillary fold by absence of ribs.
   d. Feet usually in close proximity.
   e. Meconium frequently found on the examining finger.

Diagnosis of Foot from Hand.

Foot.

1. Toes of equal length.
2. Prominence of heel at angle to limb.

Hand.

1. Fingers vary greatly in length.
2. No prominence.
3. Thumb bends over palm.

The knee may be differentiated from the elbow by offering a depression with prominences at either side, the elbow having a prominence flanked by depressions.

Mechanism.

1. Movement equivalent to flexion, breech becoming engaged in pelvis, bisiliac diameter in one or other oblique.
2. Internal rotation.
   The anterior hip rotates forward behind pubic symphysis (the denominator does not rotate forwards as in vertex cases). In L.S.A., therefore, the left hip comes forward.
3. The anterior hip catches under pubic arch, and the posterior passes over perineum, and is born.
4. The body follows, the shoulders lying in the conjugate.
5. After the birth of trunk, the head lies with the occipito-frontal diameter in the transverse of the pelvis.
6. The occiput now rotates forward behind the pubic symphysis.
7. The nape of the neck catches under the pubic arch, and the head becoming flexed on the trunk, the chin, face, forehead, and cranial vault pass successively over the perineum, and the head is born.

Management of Normal Breech Case.

First Stage.

Leave alone and preserve membranes intact till full dilatation if possible. (The bag of forewaters tends to present in a sausage-shaped form, and is thus liable to early rupture).

If membranes rupture, let breech dilate cervix.

Second Stage.

Leave alone till breech is born, so that the passages may be well dilated for the after-coming head.

After breech is born, danger to child commences. The cord is now liable to compression between head and pelvis, and rapidity of birth is thus necessary.

After birth of breech, pull down loop of cord. If no pulsation in cord, child is dead, and hurry is unnecessary. If pulsation present, assist delivery of head by *supra-pubic pressure only.*

The essential for rapid delivery is a well flexed head, therefore never pull on legs except as a last resort, because this promotes extension, which is the most frequent cause of delay.

Causes of Delay in Breech Cases.

1. Impaction of breech in pelvis.
2. Extension of arms at side of head.
3. Extension of after-coming head.
4. Rotation backward of occiput.
5. Hitching of chin on symphysis.
6. Contraction of cervix round neck.

1. *Impaction of Breech in Pelvis.*

Generally due to contraction of pelvis.

Large fœtus or rigid canals.

Management.

a. If knees flexed,

Pull down one or both feet. This reduces size of breech, and delivery is subsequently easy.

b. If knees extended,

1. Put fingers into groin and pull breech down.
2. If more traction power required, try skein of wool round groin. A blunt hook in groin is recommended by some, but is dangerous from causing lacerations.
3. Apply forceps to breech.
4. In some cases it is necessary to comminute breech with cephalotribe as *dernier ressort;* if so, always subsequently perforate head before delivery.

Extension of Arms above Head.

Management.

To free posterior arm, swing trunk of fœtus well forward, pass hand over back of fœtal shoulder, and push down elbow over face.

To free anterior arm, swing trunk of fœtus well backward, and repeat previous manipulation.

The freeing of the arms must always be

done with great care to prevent injury to the delicate bones.

3. *Rotation Backwards of Occiput.*

In spontaneous delivery with the occiput in sacral concavity, the nape of the neck catches on the perineum, and by a movement of flexion, the chin, face, forehead, and cranial vault pass successively from beneath the pubic arch, and the head is born.

This position is a common source of delay, and it is of great value to remember the method of spontaneous delivery, so that it may be followed closely when assistance is necessary.

4. *Extension of After-Coming Head.*

a. In Cavity.

The commonest cause of delay; frequently caused by injudicious traction on trunk and want of supra-pubic pressure.

Management.

Compression of the cord is now almost certain; therefore, for the safety of the child, delivery must be completed in at least five minutes.

It is essential, therefore, to keep in view the two factors required, *viz.*,

a. Promote flexion.

b. Assist secondary powers in expelling the head (the uterus has little power to

expel the after-coming head through the pelvis).

1. Make out position of occiput, whether forwards or backwards.
2. By supra-pubic pressure try to flex head, as well as assist expulsive force.
3. If unavailing, and occiput anterior, put child astride the left arm, and place fingers of left hand on upper jaw, either directly or through rectum. With fingers of right hand push occiput upwards, and at the same time swing trunk of fœtus forward beneath pubic arch. By this combined movement the chin is made to pass over the perineum in the usual manner (Fig. 10).

Fig. 10. Method of Delivery of Extended Head in Breech Cases. Occipito-Anterior.

If occiput posterior. the movement is reversed, the trunk of the child being

swung backwards, and chin and face made to appear first under pubic arch.

It is useful to remember that in head-last deliveries the chin should always be born before the occiput.

b. At Brim.

Seize feet with one hand, hook fingers of other hand over shoulders, and pull simultaneously with both vertically downwards (Fig. 11). After head reaches cavity swing trunk forward (if occiput anterior), and deliver as already shown in Rule 3.

Fig. 11. Delivery by "Prague Seizure" of After-Coming Head.

4. Forceps.

The application of forceps to the after-coming head is most satisfactory,

and it is well always to have them ready in case of delay.

In occipito-anterior positions they are specially efficacious, and should be applied under the abdomen of the child, its trunk being well thrown forward under the pubic arch during the application.

From the grip of the head now obtained, traction causes well marked flexion, and birth is frequently surprisingly easy.

In mento-anterior positions forceps are less satisfactory, as from the grip of the head obtained, traction causes extension to take place, the occiput being born first, which is contrary to the normal mechanism.

5. *Contraction of Cervix Round Neck.*

Undoubtedly the most difficult complication to deal with, and frequently requiring craniotomy.

If met with, anæsthetize and try

1. Supra-pubic pressure.
2. Combine traction on feet.
3. Forceps if applicable.
4. Craniotomy.

Craniotomy in Breech Cases.

Rules.

1. Do not unnecessarily delay operation if child already dead.

2. Perforate behind ear.
3. Extract with cranioclast.

Prognosis.

To mother.

Good.

To child.

Grave. 1 in 5 die.

Cause of Death after Delivery of Body.

1. Compression of cord.
2. Compression of placenta.
3. Dislocation of vertebræ through pulling on legs.

Signs of Approaching Death.

1. Convulsive movements.
2. Pulsations in cord first slow and strong, but immediately before death rapid and weak.

CHAPTER XVI.

Transverse Presentations.

Also called cross births. Shoulder cases. They are really oblique.

Frequency.

1 in 240 cases.

Presentation.

Shoulder, hand, elbow, or ribs.

Causes.

1. Absence of normal ovoid shape of uterus.
2. Contracted pelvis.
3. Obliquity of uterus.
4. Twins.
5. Placenta prævia.
6. Premature labour.
7. Dead fœtus.

Positions.

Two nomenclatures.

1. According to position of shoulder or acromion, which is the denominator, and is thus made to correspond with the occiput in vertex cases.

   Therefore,

   First. Left acromio - anterior,

   L.A.A.

Second, Right acromio-anterior, R.A.A.

Third, Right acromio-posterior, R.A.P.

Fourth, Left acromio-posterior, L.A.P.

2. General disposition of child *qua* the mother are named—

Dorso-anterior or posterior according to position of back, and these are subdivided into right and left cephalo-iliac positions according to iliac fossa in which the fœtal head rests.

Thus, in dorso-anterior, left cephalo-iliac, the right shoulder of fœtus presents on the left side of pelvis anteriorly, and is equivalent to L.A.A. by the other nomenclature.

Dorso-Anterior. { L. Cephalo-iliac, right shoulder presents = L.A.A.
R. Cephalo-iliac, left shoulder presents = R.A.A.

Dorso-Posterior. { R. Cephalo-iliac, right shoulder presents = R.A.P.
L. Cephalo-iliac, left shoulder presents = L.A.P.

The most frequent position is left acromio-anterior.

Diagnosis.

Most important, as artificial delivery is always called for, and the sooner the diagnosis is made the easier and less dangerous is the treatment.

Methods.

1. Inspection shows transverse elongation of uterine tumour.
2. External palpation reveals breech and head at different sides.
3. Vaginally.

   Os uteri high up.

   Presentation of membranes, probably sausage-shaped; presenting part difficult to reach.

   Shoulder offers bony prominence with three radiating ridges, the clavicle, spine of scapula, and humerus.

   Higher up, cleft of axilla with ribs may be felt.

   Elbow offers bony prominence with depression on either side.

   Hand from foot already given (page 131).

   The right or left hand may be easily recognised from the name, as it accommodates itself to shaking hands with the hand of the operator.

Diagnosis of Position.

Is most easily attained by external palpation, and is most important to acquire before treatment is adopted.

Prognosis.

To mother.

Varies according to advancement of labour.

If advanced, grave.

Spontaneous delivery is almost impossible.

If diagnosed before membranes ruptured, good.

If diagnosed long after membranes ruptured, unfavourable.

To child.

Very grave.

Almost 50 per cent die.

Mechanism.

Spontaneous delivery is only possible with a small, premature, flexible fœtus, and results through a process called "spontaneous evolution," which consists of four movements.

1. Impaction of shoulder and chest in oblique diameter of pelvis.
2. Rotation forwards of shoulder to behind pubic symphysis.
3. Depression of chest and breech along hollow of sacrum till thorax reaches vulva.
4. Expulsion of breech and legs followed by head.

It is well to remember this mechanism of spontaneous evolution, as in cases so impacted that version is impossible, delivery may be attempted by nature's method.

Delivery by Spontaneous Version.

Is extremely rare, and consists in the spontaneous substitution of breech or head for the shoulder. This generally occurs before or immediately after rupture of membranes.

Management of Shoulder Cases.

1. Make diagnosis of position.
2. Examine always between pains, and with great care, so as to avoid rupturing membranes.
3. Turn whenever diagnosed.

Rules for turning. (*See* page 149.)

If Shoulder Impacted in Pelvis.

1. Put deeply under chloroform.
2. Attempt version by internal method.
3. If version impossible,
   - *a.* Try and deliver by spontaneous evolution.
   - *b.* Decapitate.
   - *c.* Eviscerate.

STILL BIRTH.

Also called asphyxia-neonatorum and apnœa-neonatorum.

Definition.

Asphyxia of new born not incompatible with the continuance of life.

Causes.

1. Interference with maternal circulation.
   - *a.* Antepartum hæmorrhage.
   - *b.* Eclampsia.
   - *c.* Chest complications.
   - *d.* Death.
2. Interference with fœtal circulation.
   - *a.* Compression of cord.
   - *b.* Compression of placenta.
   - *c.* Separation of placenta.
   - *d.* Cerebral and thoracic compression in

Small pelvis.
Face cases.
Forceps.

Physiology.

Excess of carbonic acid in fœtal blood first irritates respiratory centre and causes attempts at respiration, resulting in the inhalation of liquor amnii, etc. Further excess of carbonic acid paralyses respiratory and cardiac centres, and death ensues if fœtus be not speedily delivered.

If compression of the brain (with or without intra-cranial hæmorrhage) be the cause, death may occur without intra-uterine respiration from paralysis of cardiac centre.

Appearance of Child when Born.

Two Forms.

1. Asphyxia livida.
2. Asphyxia pallida.

Asphyxia Livida.

1. Congested and cyanosed appearance.
2. Muscular tonicity present.
3. Cardiac and funic pulsations slow, but forcible.
4. Occasional spasmodic attempts at respiration, with facial contortions.

Asphyxia Pallida.

1. Corpse-like appearance.
2. Muscular tonicity absent.
3. Funic pulsation absent.
4. Cardiac beat frequent and feeble.

5. Occasional attempts at respiration without facial contortion.

Prognosis.

Always grave, specially so in A. pallida.

Treatment of A. Livida.

1. Remove inhaled fluids from mouth and upper air passages with corner of towel.
2. Invert fœtus, and excite respiration by cutaneous stimulation through slapping gluteal region.
3. Dash a handful of cold water over chest.
4. Perform artificial respiration (Schultze).
5. If still unavailing, put into warm bath 106° F.; allow a little blood to escape from cord, and pass gum elastic catheter, No. 6 to 8, into trachea; this acts reflexly.

Persevere with treatment as long as heart beats.

Treatment of A. Pallida.

1. Clear out mouth and upper air passages.
2. Put at once in hot bath 108° F., and then keep child warm with flannel.
3. Perform artificial respiration (Sylvester).
4. Intubate trachea with catheter, and blow air into lungs.

Schultze's Method of Artificial Respiration.

Hold child face forwards, with fingers spread over back, thumbs over clavicles on anterior chest wall, and forefingers in axillæ.

Then slowly raise over shoulder till child is totally inverted, with the legs dropping behind operator's back.

Return slowly to original position, and repeat movement eight to ten times a minute.

Sylvester's Method.

Place child on back with shoulders raised.

Fix the feet and pull forward tongue.

Grasp arms above the elbow, slowly evert, and draw them up to sides of head.

Then slowly return, and press firmly on sides of chest.

CHAPTER XVII.

Version or Turning.

The artificial substitution of one presenting part for another.

Varieties.

Cephalic, substitution of head as presenting part.

Podalic, substitution of breech as presenting part.

Methods.

External.

Internal.

Bipolar.

External Version.

Is only applicable when membranes are intact and liquor amnii abundant.

In performing, place patient on back, with knees well drawn up, lay hands flat on abdomen, and seek breech and head of fœtus.

In the intervals of pains, press the one down and the other up.

During uterine contractions desist from active movement, and confine efforts to holding fœtus steady in position already acquired.

When part of fœtus desired presents, rupture membranes, and from the escape of liquor amnii the fœtus will remain fixed in position obtained.

BIPOLAR VERSION *(Podalic).*

Requires for its efficient performance the membranes intact, and os uteri sufficiently open to allow introduction of two fingers.

Preliminaries.

Empty bladder and rectum.

Anæsthetize patient thoroughly.

Place patient on left side, with knees drawn up.

Lubricate back of left hand and forearm.

Operation.

1. Introduce whole hand slowly into vagina, the fingers during entrance being brought together in the form of a cone.
2. Pass two fingers through os internum.
3. Only act during intervals of pains.
4. When presenting part reached, push well up and to one side, and, at the same time, with right hand over abdomen, depress breech, then by series of short jerking movements between pains, push the two extremities of the fœtus in opposite directions.
5. When breech well down, the membranes should be ruptured during a pain, and a foot hooked into vagina.
6. By traction on the leg, the breech can now be brought well into pelvis.

Internal Version.

By this method the entire hand is introduced into the uterus.

It is practically only applicable to the podalic variety.

Is usually the only method to be employed after membranes ruptured.

Method of Performance.

1. Anæsthetize patient deeply. This lessens uterine contractions, and prevents movement of patient.
2. Place patient in left lateral position. Some operators prefer the dorsal.
3. The hand to be introduced should vary according to position of child.

   If dorso-anterior, use left hand.

   If dorso-posterior, use right hand.
4. Lubricate back of hand and arm thoroughly.
5. Introduce hand in shape of a cone, and insinuate slowly.
6. Place other hand over fundus uteri.
7. If membranes intact, rupture them at lowest part, and introduce hand at once to prevent escape of liquor amnii.
8. Pass internal hand along ventral surface of fœtus, and grasp knee or foot, but during a pain flatten hand firmly upon fœtus.
9. Pull on part grasped, and with external hand push down breech.

When foot and leg are pulled into the vagina, the case should be conducted according to exigencies.

If no hurry, leave nature to complete birth of breech, and conduct as in ordinary breech presentations.

If danger or delay, complete labour artificially, as in complicated breech cases. (*See* p. 134.)

Difficulties.

Long escape of liquor amnii, with the uterus firmly contracted on fœtus.

In these cases extreme care must be exercised to prevent rupture of uterus.

If the fœtus cannot be turned by simple traction, fix a loop of wool round limb, and while pulling on it, push up shoulder from vagina. In performing this manipulation, assistance is required to press firmly on uterus supra-pubically, and thus prevent rupture.

Practical Rules for Turning.

1. If membranes unruptured, and os uteri but slightly dilated, try external method.
2. If membranes unruptured, and os uteri sufficiently open to admit two fingers, try bipolar method.
3. If membranes unruptured and os uteri fully dilated, try bipolar method first if no hurry; if urgent, perform internal method at once.
4. If membranes ruptured and os dilated, at once resort to internal method.
5. If membranes ruptured and os undilated dilate cervix with hand, and turn by internal method.

Indications for Turning.

1. Transverse presentations.
2. Prolapse of cord in first stage.
3. Placenta prævia.
4. Some face and brow cases. (*See* page 128.)
5. Some authors say in flat pelvis, but forceps are better.
6. In accidental hæmorrhage and other urgent complications, where it offers the most rapid mode of delivery.

CHAPTER XVIII.

Instrumental Labour.

Forceps.

Since invented by Chamberlen in 1675, the forceps, though maintaining their essential original characteristics, have undergone a never-ending series of modifications, till at the present day the perfected instrument is represented by the "Axis Traction Forceps," the principles of which were first suggested by Tarnier.

Axis traction rods are now applied to all the main types of forceps, each of which has its supporters. For practical purposes, therefore, those of Simpson may be taken as offering as perfect an instrument as is at present to be met with (Fig. 12.)

The axis traction instrument should be used on all occasions; therefore more than one pair is unnecessary.[1]

Advantages of Axis Traction.

1. Traction can be made in axis of brim.
2. Excessive compression of head is avoided

[1] Many practitioners keep a variety of instruments for high and low operations, etc.

(with ordinary forceps the compression force is equal to half the traction force).

3. The normal mechanism is not hindered. Internal rotation can take place during traction.

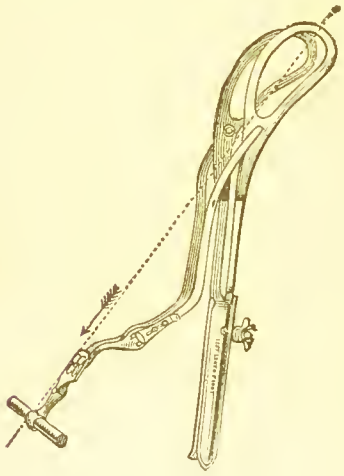

Fig. 12. Simpson's Axis Traction Forceps (Murray's modification). Dotted line shows line of traction.

4. Rules for traction are easier. All one requires to remember is to keep the traction rods parallel with shanks.
5. Have less tendency to slip.
6. Have greater traction power.

Mode of Action of Forceps generally.

1. As tractor.
2. As compressor.
3. Dynamic.

The old actions as lever and rotator are to be avoided.

General Indications.

1. Where the ordinary powers are unable to complete labour.
2. When speedy delivery is demanded with regard to safety of mother or child.

Special Indications.

I. Due to abnormality in powers.
   - *a.* Inertia uteri.
   - *b.* Irregular uterine action.
   - *c.* Misdirected force, anteversion, etc.
   - *d.* Absence of secondary powers in paralysis, debility, etc.

II. Due to abnormality in passages.
   - *a.* Rigidity of cervix.
     Only as last resource.
   - *b.* Rigidity of vagina and perineum.
   - *c.* Contracted pelvis.
     Between three and four inches in conjugate. (*See* p. 115.)

III. Due to faults in passenger.
   1. Large well ossified head.
   2. Malpositions of head.
      Persistent R.O.P., etc.
   3. Malpresentations.
      - *a.* Face and brow. (*See* p. 127.)
      - *b.* Impacted breech.
      - *c.* After coming head in breech cases.

IV. Impacted Twins.

V. Dangerous Labours
   1. To mother.
      a. Eclampsia ; *b.* Hæmorrhage, etc.

2. To child.
   - *a.* Prolapse of cord.
   - *b.* After-coming head if suffocation imminent.
   - *c.* If death imminent.

Method of Operating.

Divided into high and low operation.

High = above the brim.

Low = in pelvis.

The method of operating is essentially the same in both, the high being somewhat more difficult from

1. The height of presenting part.
2. The mobility ,, ,,
3. The passage of instrument through the cervix.

RULES IN USING FORCEPS.

Preliminary.

1. Tell patient and friends.
2. See that bladder and rectum are empty.
3. Use anæsthetic where possible.
4. Warm and oil instrument.
5. Place patient in left lateral position, with hips well over edge of bed, and supported on knee of nurse.

I. *With Assistance.*

Introduction of First Blade.

1. Pass left hand into vagina below fœtal head, with palmar surface in connection with it.[1]

[1] In high operations fingers of left hand must be passed through cervix so as to direct blade of forceps within the uterus.

2. Introduce between pains. left lower blade first, along palmar surface of hand, remembering axes of pelvis, and acting accordingly.
3. After point of blade reaches fœtal head, retain it always in contact.
4. Introduce in transverse diameter of pelvis along left lateral wall.
5. Give to nurse to hold in position.

Introduction of Second Blade.

1. Pass left hand into vagina above fœtal head, with palmar surface in contact with it.
2. Swing traction rod forward before introduction.
3. Introduce between pains, as in first blade, along palmar surface of hand.[1]
4. When opposite left blade, lock blades.
5. If difficulty, do not use force, but rather reapply.
6. After locking, swing back traction rod, adjust fixation screw, and apply traction handle.

Traction.

1. Grasp traction handle only.
2. Pull during pains, and if none, at intervals.
3. Keep traction rods parallel with shanks.
4. Between traction loosen fixation screw.
5. Examine occasionally to make out if progress.

[1] To do so, the handle of blade requires to be much depressed, thus the necessity for hips being well over edge of bed.

6. Pull in axis, and do not extend head at outlet.
7. After head born remove forceps and express body.

II. *Without Assistance.*

After introduction of lower blade keep it in position with last two fingers of left hand, and guide upper blade with thumb and first two fingers.

Introduce upper blade along hollow of sacrum till fenestrated portion within vagina, then sweep entire blade round head into transverse diameter by rotating and depressing handle.[1]

General Practical Hints.

1. Apply in multiparæ if second stage prolonged over $2\frac{1}{2}$ hours.
2. Apply in primiparæ if second stage prolonged over $3\frac{1}{2}$ hours.
3. Always apply blades *qua* the pelvis (in transverse).
4. Do not apply through undilated cervix unless all means of dilatation have failed and the mother is in danger.
5. Never touch application handles during traction.
6. Unless danger, do not hurry.
7. After head born always assist delivery of body by supra-pubic pressure. By this means uterine contractions are favoured and hæmorrhage prevented.

[1] This movement removes necessity of patient being held with buttocks well over bed.

8. If rotation of head occurs in occipito-posterior positions, take off forceps and reapply.
9. If excessive extension of head occurs before passing vulva (shown by application handles becoming thrown up over abdomen), remove and reapply.[1]

Dangers to Mother.

1. Laceration of cervix and perineum.
   These should be avoided by care and patience.
2. Sloughing of soft parts from compression.
   This is nearly always due to waiting too long before applying, and is from the want therefore, not the use.
3. Separation of symphysis.
   Very rare.

Dangers to Child.

1. Compression of head.
2. Injuries to scalp.
   Soon disappear.
3. Bell's paralysis.
   Usually soon disappears.
4. Fracture of cranial bones.

As a broad rule it may be said there is much less danger to the child from the use of forceps than from version.

[1] This probably results from the head being gripped when excessively flexed.

CHAPTER XIX.

Embryulcia.

Craniotomy

Is the term applied to all operations for the reduction of size of the child's head. The complete operation consists of three stages—

1. Perforation.
2. Comminution.
3. Extraction.

Indications, general.

1. Where great disproportion exists between fœtal head and passages.
2. Where the prolongation of labour will seriously affect the life of the mother, as in hæmorrhage, etc.

Special Indications.

1. Contracted pelvis—between two and three inches.
2. Pelvic, ovarian, and other tumours, *e.g.* cervical fibroids and cancer of cervix.
3. Impacted malpositions and presentations.
4. Large head, hydrocephalus especially.
5. Where immediate delivery is required for the sake of the mother.

Now that Cæsarian section is being performed with

such excellent results, the indications for embryulcia are becoming fewer and fewer, and it is probable that in a short time the operation will be only known as a relic of former barbarism.

Method of Operating.

A. Preliminaries.

1. Always have consultation.
2. Place patient in left lateral position, as for forceps.
3. Anæsthetise deeply.
4. Have utensil ready for brains.

B. Perforation, by means of perforator. (Fig. 13.)

Fig. 13. Perforator.

1. Fix head,
   By forceps, or
   By supra-pubic pressure.
2. Examine and make out—

Edge of cervix. Cervix need not be fully dilated in all cases as in hydrocephalus.

Sacral promontory.

Position of head.

3. Introduce left hand into vagina as guide.
4. Pass perforator along left hand to head.
5. Perforate bone by boring movement.
6. Push perforator into cranial cavity as far as stop on instrument, and then

Fig. 14. Braun's Cranioclast.

open blades. turning the instrument in all directions.

7. Thoroughly destroy base of brain in case of child being born alive, and wash out cranium and vagina.

C. Extraction.

1. By forceps.

2. By cranioclast.
3. By cephalotribe.
4. By crotchet.

By forceps.

In minor disproportions between head and pelvis, forceps are sufficient for extraction; if inefficient try

Cranioclast. (Fig. 14.)

Introduce solid blade into cranial

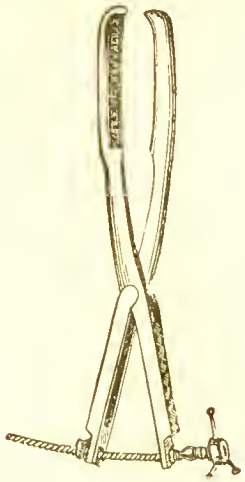

Fig. 15. Hick's Cephalotribe.

cavity and fenestrated blade over head as in forceps. A portion of cranial vault is thus caught between blades, and effective traction can be made. It is well, if possible, for catch to be made

over face, as the bones are here well ossified, and the grip is firmer.

Cephalotribe. (Fig. 15.)

Non-fenestrated forceps. Acts both as comminutor and extractor. It is applied in a similar manner to forceps, one blade on either side of fœtal head. As a simple extractor it is less efficient and more dangerous than the cranioclast, because in being compressed in one diameter the head is elongated in the opposite; while with the cranioclast, moulding of the head to the passages is unhindered. As a comminutor, however, the cephalotribe is of the utmost service, and in some cases, as impacted breech, is indispensable.

Crotchet.

A sharp, acutely-bent hook, much used at one time, but now almost entirely superseded by the cranioclast.

D. Comminution

Is necessary when simple perforation is insufficient to allow of delivery of head. It is performed chiefly by means of

1. The cephalotribe.

2. The craniotomy forceps
3. The basilyst.

Cephalotribe already described.

Craniotomy forceps.

By means of this instrument portions of the cranial vault are broken up and removed, care being taken to avoid injuring the scalp, which should be retained as a covering to the ragged edges of bone to prevent laceration of the soft passages. This method of

Fig. 16. Simpson's Basilyst.

comminution is chiefly adopted when the cranioclast is used as the extractor.

Basilysis

is essentially adapted for comminution of the base of the skull.

Rules for using basilyst. (Fig. 16.)

1. Perforate cranial vault as with ordinary perforator.
2. Withdraw instrument, wash out cranial cavity, and introduce finger to make out base.
3. Reintroduce basilyst along finger to base, and perforate it.
4. Open up blades of instrument so as thoroughly to disintegrate base of skull.

Simple disintegration of the cranial base is usually sufficient to allow of delivery, but if extraction be required, the cranioclast may now be used.

An external blade has been devised to fit on to the basilyst for extracting purposes, but is unwieldy and not to be recommended.

Practical Hints for Craniotomy.

1. If with forceps delivery is impossible, retain hold of head by the forceps and perforate.
2. After perforation, again attempt delivery with forceps.
3. If unsuccessful, remove forceps and apply cranioclast.
4. If still ineffectual, comminute cranial vault with craniotomy forceps, and reapply cranioclast.

5. If further comminution necessary, the cephalotribe or basilyst must now be used.
6. Do not, for sentimental reasons, delay operating too long, as the safety of the mother must always be the first consideration.

EMBRYOTOMY.

Term used for the reduction of the body of the child by mutilation. It includes

Decapitation and

Evisceration.

Decapitation

Is employed where, in a transverse presentation, with neck accessible, turning is impossible with safety to the mother. Many special instruments have been devised for its performance, but it may be most simply and efficiently performed by a long, straight pair of blunt-pointed scissors. In operating, pull upon prolapsed arm to bring neck well down, then hook fingers round neck, and carefully divide soft parts and vertebral column by a series of short cutting movements.

After decapitation, deliver body by traction upon arm, then seize head with forceps or cephalotribe, and extract.

Evisceration

Is indicated,

1. In impacted transverse presentations, where the neck is inaccessible, and where turning is impossible or dangerous.

2. In enlargements of the fœtal trunk chiefly from pathological conditions, but occasionally from extraordinary developments.
3. After craniotomy in extreme cases of contracted pelvis. These should all be treated by Cæsarian section.

Operation.

1. Perforate chest, and divide several ribs.
2. Introduce half hand and eviscerate, first thorax, then abdomen.
3. If transverse position, delivery can now either be attempted by pulling down breech, or making traction on arm to expose neck and allow of decapitation.

CHAPTER XX.

Induction of Premature Labour,

Means bringing pregnancy to a close at an early period after the fœtus can maintain an extra-uterine existence.

Indications.

When delivery at term, or the continuance of pregnancy, causes danger to mother or child, and can thus be diminished, as in

a. Contracted pelvis.

Flat pelvis, with $2\frac{3}{4}$ to $3\frac{1}{4}$ inches conjugate.

Justo minor, from 3 to $3\frac{1}{2}$ inches conjugate.

b. Tumours of pelvis.

c. Habitual death of fœtus in later months.

d. Diseases of mother.

1. Vomiting.
2. Convulsions. ? (*See* page 32.)
3. Chest disease.
4. Over-distension of abdomen from hydramnios, ascites, tumours, etc.
5. Uterine hæmorrhages.
6. Chorea.

The most suitable period for performance is after the thirty-third week (230 days), as the child, though viable at the twenty-ninth week, seldom lives if born thus early.

The calculation of the period of pregnancy is sometimes most difficult, and is perhaps most satisfactorily obtained by measuring the fœtus in utero, its intra-uterine length in inches closely corresponding with the lunar month of gestation. Thus, a fœtus measuring from vertex to breech in utero 8½ inches, will probably be 8½ lunar months old, or about 248 days.

The intra-uterine length is usually easily obtained by measuring with calipers from the upper border of pubic symphysis to upper edge of fundus uteri.

Other methods of calculating must not be forgotten *(see* page 67), but these are always liable to error, and should be corroborated by measurement.

Methods of Inducing Labour.

Very many methods have been tried, such as drugs (ergot, etc.), friction, vaginal plugs and injections, electricity, rupturing membranes, etc., but they cannot be recommended.

Those now chiefly adopted are three in number.

1. Catheterisation of uterus.
2. Dilatation of cervix.
3. Intra-uterine injection of glycerine.

A. Catheterisation of Uterus.

1. Douche vagina with antiseptic solution, and
2. Introduce a new thoroughly aseptic No. 9 gum elastic bougie slowly between uterus and membranes for at least six inches, leaving the remainder curled up in the vagina.

This usually excites uterine contractions within twenty-four hours, although days may pass before pains commence.

This is the most frequent method employed, as it is simple of performance, certain in its action, and subjects the mother to little risk.

If, however, rapidity of action is necessary, dilatation of the cervix should be performed.

B. Dilatation of Cervix.

According to time at disposal, this is to be performed by means of tupelo tents, fingers, or Hegar's dilators.

If extreme rapidity desirable,

1. Forcibly introduce finger or Hegar's dilators through os internum.
2. After introduction of finger, sweep it round lower pole of ovum, and separate it from lower uterine segment.
3. Continue sweeping movement round edges of os, which will gradually become dilated sufficiently to admit two fingers.
4. Further dilatation is now most con-

veniently performed by Champetier de Ribes bag. If this be used, the membranes should be ruptured previous to its introduction.

5. Introduce bag, and fill with warm water.
6. By gentle traction on the bag, the os will gradually become dilated, and on its total expulsion will be found sufficiently patent to allow of any further manipulation deemed necessary for delivery.

The initial dilatation by means of tupelo tents should always be done if delay of a few hours is not of grave moment, as the gradual dilatation thus accomplished is associated with a distinct softening of the cervical tissues, and subsequent dilatation is much assisted, and laceration less liable to occur.

Tupelo tents usually require about eight hours for expansion.

Intra-Uterine Injection of Glycerine.

This method of causing uterine contractions has found much favour among many obstetricians.

Two to three ounces of glycerine are slowly injected between uterine wall and membranes, and a glycerine plug is then placed in vagina.

Contractions are frequently rapidly produced, but in many cases the method is unreliable.

It is worthy of trial, however, if delay is of little moment.

Dangers of Inducing Labour.

To mother.

1. Septic poisoning.
2. Lacerations of rigid cervix.

To child.

1. Immaturity.
2. Malpresentations.
3. Difficulty of correct calculation of age.

Cautions.

1. Have consultation before performing.
2. Wait as long as consistent with safety to mother.
3. Use antiseptics rigidly.
4. Have means of resuscitating child ready.

Artificial Abortion.

Indications.

1. Incarcerated malpositions of uterus.
2. Diseases of pregnancy otherwise unsuccessfully combated.
3. Contracted pelvis.

   Conjugate $1\frac{1}{2}$ inches before sixth month.

   Conjugate $1\frac{1}{4}$ inches before fifth month.

   Conjugate 1 inch before fourth month.

   Under 1 inch useless.

Methods.

a. Before third month.

Dilate cervix with tupelo tent, and clear out uterus with finger. Use

antiseptics rigidly, and wash out uterine cavity.

b. After third month.

Rupture membranes by passing sharp quill along sound.

The mere passage of the sound into the uterus is frequently all that is required to procure abortion, and is perhaps the most common method adopted.

CHAPTER XXI.

Cæsarian Section.

This term is applied to all methods of removing the fœtus by abdominal section.

Varieties.

Cæsarian section proper.

Porro's operation.

Gastro-elytrotomy (almost obsolete.)

Indications.

1. Insurmountable difficulties to delivery, per vias naturales, viz.,
   - *a.* Contracted pelvis (below two-inch conjugate).
   - *b.* Solid pelvic tumours.
   - *c.* Hypertrophy of cervix.
2. In some severe maternal complications, as
   Uterine rupture.
   Accidental hæmorrhage, etc.
3. Always after death of mother.

From the increasing safety with which the operation is now performed there can be but little doubt that the indications will also rapidly increase, and it is more than probable that in a few years it will supersede to a great extent, if not entirely, mutilation of the fœtus in all forms.

METHODS OF OPERATING.

I. CÆSARIAN SECTION.

a. Period of operating.

The most suitable period is after the commencement of labour, before rupture of the membranes, because

1. The open cervix allows of free drainage of the uterine cavity.
2. The intact amniotic cavity allows easier manipulation of the fœtus in its removal through the uterine rent.

b. Preliminaries.

1. Wash out vagina with antiseptic.
2. Empty bladder.
3. Make out position of fœtus.

c. Operation.

1. Make mesial abdominal incision at least six inches in length, commencing $2\frac{1}{2}$ inches above symphysis to avoid bladder.
2. After opening into peritoneal cavity, have uterus pushed well into abdominal wound before incising, as by this means the liquor amnii, blood, etc., are prevented from getting into peritoneal cavity.
3. Incise uterine wall boldly and rapidly for at least 5 inches.
4. After reaching membranes, introduce hand and extract fœtus head first.

5. Ligature cord, reinsert hand and remove placenta and membranes.
6. Pull uterus through abdominal wound and control hæmorrhage by grasping broad ligaments and cervix, or by a temporary elastic ligature round cervix.
7. Wash out uterine cavity and close uterine wound.
    a. With six or seven deep sutures of silk, which should pass through the entire thickness of wall except the decidua.
    b. With numerous catgut sutures to approximate the peritoneal edges of the wound.
8. Thoroughly cleanse the peritoneal cavity from all blood-clot and other fluids by means of handled sponges, and flushing.
9. Remove temporary ligature and return uterus into abdominal cavity.
10. Suture abdominal wound with silk, passing the ligatures through entire thickness of skin, muscle, and peritoneum.

The after treatment is the same as in other abdominal operations.

PORRO'S OPERATION.

Should be performed before labour commences.

It essentially differs from Cæsarian section proper, in that the uterus and appendages are removed.

Method.

1. As in Cæsarian section proper till after removal of fœtus.[1]
2. The uterus, with placenta and membranes in situ, is now pulled through abdominal wound.
3. A permanent ligature of elastic tubing is placed round cervix, and the uterus and appendages removed.
4. The peritoneal cavity is now thoroughly cleansed.
5. The uterine stump is placed in the lower angle of the abdominal incision, being prevented from retracting into abdomen by knitting pins, which are passed through ligature and stump, so as to transfix it in opposite directions.
6. The peritoneal edges of the abdominal wound are now carefully stitched to the stump below the ligature, and the wound afterwards closed as previously described.
7. The stump is merely kept dry by lint, and drops off in from a week to a month.

ADVANTAGES.

Relative Consideration of Methods.

Cæsarian Proper.

1. Mortality about 9 per cent.

[1] Müller modified the operation by making a large abdominal incision and taking uterus through wound before incising uterus and extracting fœtus. By this means there is less chance of liq. amnii, etc., escaping into peritoneal cavity.

2. No mutilation. May again bear children.[1]
3. Requires skilled assistance.
4. Does not cure osteomalacia.

Porro Operation.

1. Mortality, 14 per cent.
2. Cannot again conceive.
3. Easier without skilled assistance.
4. Cures osteomalacia.

SYMPHYSEOTOMY

Division of the symphysis pubis; an operation first brought forward by Sigault, and lately revived with great enthusiasm.

Operation.

1. Incision down to symphysis.
2. Cut through symphysis with curved bistoury from above downwards (the articulation is usually situated slightly to one or other side of the middle line.)
3. Extract fœtus by forceps or turning.
4. After extraction adjust divided edges of symphysis to one another, suture wound, and fix with strips of adhesive plaster.
5. Keep in bed for six weeks till union is complete.

Limit of safe separation, 3 inches.

Dangers.

Inflammation of sacro iliac joints.

Injury to bladder.

Incomplete union of symphysis.

[1] It may thus broadly be stated that, given favourable conditions in a non-osteomalacic patient, the ordinary Cæsarian operation should always be performed.

Indications.

Contraction of conjugate to between $2\frac{1}{2}$ and $3\frac{1}{4}$ inches.

Large, well ossified head undeliverable by forceps.

CHAPTER XXII.

Complicated Labour.

Hæmorrhages.

1. Placenta prævia.
2. Accidental hæmorrhage.
3. Postpartum Hæmorrhage.

Placenta Prævia.

Is the implantation of the placenta on the lower uterine segment.

Occurs 1 in 1000 cases.

Varieties.

1. *Central or Complete.*
   When, on complete dilatation of cervix, only placenta can be felt presenting.
2. *Partial.*
   When, on complete dilatation, both placenta and membranes can be felt presenting.
3. *Marginal.*
   When, on complete dilatation, the placental border may be felt to reach edge of os, but does not present.

Causes.—(Theoretical.)

1. Pre-existing endemetritis preventing for-

mation of natural folds of uterine mucosa which catch impregnated ovum.

This probably accounts for its greater frequency in multiparæ. (6 to 1.)

2. Absence of formation of decidua reflexa.

Symptoms.

Hæmorrhage during Pregnancy.

Period of Onset.

Usually, in later months of pregnancy, from sixth onwards.

May not occur till labour commences.

May be present in early months.

Character.

Sudden in onset, during or without exertion.

Generally at first moderate, but occasionally suddenly profuse.

Cause.

From stretching of lower uterine segment causing detachment of placenta ; it must therefore occur during first stage, and is thus called unavoidable hæmorrhage.

Seat.

a. From sinuses in lower uterine segment.

b. From partially separated cotyledons of placenta.

Effect on Patient.

Progressively increasing pallor.

Restlessness and sighing.

Cold sweats.

Small rapid pulse.

Effect of Placenta Prævia on Pregnancy

Tends towards premature labour.

Frequent source of malpresentations, 33 per cent.

Effect of Placenta Prævia on Labour.

Tends to delay first stage from the attached placenta preventing retraction of the lower uterine segment.

Predisposes to postpartum hæmorrhage from the passive lower uterine segment but feebly closing the uterine sinuses.

Diagnosis.

Hæmorrhage in the later months of pregnancy is always suspicious.

By Vaginal Examination.

Vaginal fornices soft and boggy.

Ballottement obscure.

The only absolute sign is the palpation of the placenta through the os internum.

The placenta may be mistaken for a presenting blood clot; but its rough granular feel and adherence to the uterine wall, ought at once to distinguish it.

Prognosis.

To mother.

Varies according to extent of placenta presenting.

The partial and complete combined, about 15 per cent. die.

In complete, 36 per cent.

To child.

Very grave.

1 in 2 dead born.

Treatment.

As a broad rule, it may be said that on diagnosis, delivery should be completed without delay, as each subsequent attack of hæmorrhage tends to lessen the mother's chance of recovery.

If Marginal

Rupture membranes. This is usually sufficient, as the presenting part descends and compresses placenta against the uterine wall, and thus stops the hæmorrhage.

If Partial or Complete.

Labour not commenced.

1. Plug vagina firmly. This controls hæmorrhage, and tends to cause uterine contractions.
2. After six to eight hours remove plug, and if os slightly dilated, introduce finger, and turn by bipolar method of version.

If os completely closed, the finger can usually be easily pushed through it, as fortunately in most cases the cervical lips are pliable and soft.

If cervix rigid, introduce tupelo tent, and again firmly plug vagina. Slight dilatation will thus be secured in eight hours.

3. When version is accomplished, separate

rapidly as much of placenta from uterine wall as can be reached.

4. If edge of placenta can be reached, here rupture membranes and pull down foot, thus plugging cervix and controlling hæmorrhage.

   If edge of placenta unattainable, push finger through its substances, rupture membranes and pull down foot.

5. After foot is drawn down do not hurry. Allow uterus to expel breech. If hæmorrhage, however, returns, pull firmly on foot, by which means more plugging is attained.
6. After birth of child, be prepared for postpartum hæmorrhage, which is very liable to occur.
7. Remain with patient several hours after delivery, and be watchful of secondary bleeding, which is common.
8. Remove placenta immediately; this is often found adherent (46 per cent.); therefore always introduce hand into vagina and remove it entire.
9. If postpartum hæmorrhage occurs and is uncontrolled by hot water, plug uterine cavity and vagina.

Method of Plugging Vagina.

Tie a number of cotton-wool pledgets on a piece of string in kite's tail form, soak in 1 to 20 carbolic solution, and squeeze out.

After thoroughly emptying bladder and rectum, expose vaginal roof with Sim's speculum, and pack vagina tightly.

ACCIDENTAL HÆMORRHAGE.

Bleeding from a normally situated placenta.

More frequent in multiparæ.

Varieties.

I. *Concealed or Internal.*

Where the effused blood is retained in utero, either between membranes and uterine wall, or in amniotic cavity.

II. *Apparent or External.*

Where there is no obstruction to its escape per vaginam.

Causes.

1. External violence.
2. Undue exertion.
3. Placental disease.
4. Irregular uterine contractions.

Symptoms.

a. Of Internal.

1. Collapse.
2. Feeble uterine contractions.
3. Distension of uterus; sometimes irregular.
4. Pain in uterus.

b. Of External.

Excessive hæmorrhage from vagina, with pains and collapse.

Diagnosis.

Easy, if external, from the hæmorrhage.

Difficult if internal.

May mistake for rupture of uterus

Differential Diagnosis from Uterine Rupture.

Accidental Hæmorrhage.

1. Generally before membranes rupture.
2. Uterus increased in size.
3. Presenting part remains *in statu quo.*

Rupture.

1. Generally after membranes rupture.
2. Uterus diminished.
3. Presenting part recedes or changes.

In partial rupture the symptoms and signs are almost identical.

Prognosis.

Very grave, especially in concealed hæmorrhage, as the patient is usually in an advanced stage of collapse before danger is recognised.

Mortality, 50 per cent.

Treatment.

1. If hæmorrhage slight.

   Rupture membranes. This frequently entirely arrests bleeding; but the closest attention must be given to the state of the pulse, etc., in case of subsequent concealed hæmorrhage, as the advancing presenting part is liable to block the passages, and thus prevent the exit of blood.

2. If hæmorrhage severe.

   Empty uterus without delay is the one essential.

   Rupture membranes early is strongly

advocated by some, and as strongly deprecated by others. Its beneficial effect is frequently remarkable, and is worth a trial. If rapid delivery per vias naturales is impossible without severe laceration of parts, Cæsarian section is preferable.

Delivery by turning is here specially indicated, as partial abstraction of the child allows the uterus to become more contracted, and thus assists the closure of the patent sinuses from which the hæmorrhage proceeds.

CHAPTER XXIII.

Postpartum Hæmorrhage.

Source.

1. From placental site.
2. From lacerations of passages, cervix, etc.

From Placental Site.

This may occur before or after the placenta is expelled.

Normal Hæmostatic Factors in Uterus.

1. The tonic contractility of the organ.
2. The clonic contractions or pains.

That both these factors combine to thoroughly close the uterine sinuses, may be ascertained by placing the hand on the uterus after the placenta is expelled, when it will be felt to become alternately flaccid and hard.

Normally during the flaccid state there is no hæmorrhage, showing that this tonic contractility is sufficient to prevent hæmorrhage alone. This is, however, assisted by the strong, intermittent uterine contractions, which eventually bring the uterus to such a firm state of tonic contraction

that it feels permanently hard. *Dangerous hæmorrhage is thus the result of want of tonic contractility in the organ.*

Causes.

1. Inertia, from
   - *a.* Exhaustion from previously delayed labour.
   - *b.* Too rapid delivery.
   - *c.* Previous excessive distension of uterus from twins, hydramnios, etc.
2. Irregular contractions.
3. Morbidly adherent placenta (when partial only).
4. Disease of uterine wall, fibroids, &c.
5. Retention of clots or portion of secundines.
6. Large placental site after twins.

Symptoms and Signs.

Hæmorrhage, with a flabby, uncontracted uterus.

In some cases the hæmorrhage is retained, and distends the uterus (concealed variety). Here the uterus will be felt somewhat firm, but much enlarged beyond the usual size.

Treatment of Inertia.

I. Precautionary.
   - *a.* Always express body of child.
   - *b.* Deliver body slowly.
   - *c.* Retain hold of uterus after delivery.

II. Active.
   1. If bleeding apparent, try to grasp

body of uterus supra-pubically, and rub, knead, and compress it. If concealed, compress firmly and express retained blood.

2. If bleeding continue, introduce right hand into uterus, clear out all clots and placenta if still present, and then thoroughly compress uterine wall between internal hand and left hand placed supra-pubically.
3. If still unavailing, inject into uterus rapidly with Higginson's syringe hot water 120° F.[1] This is practically always efficacious; but should it fail, nothing remains but to
4. Plug uterine cavity.

III. After Treatment.

1. Inject ergotine subcutaneously.
2. Hold uterus firmly supra-pubically for at least half an hour.
3. Keep patient absolutely quiet.
4. Beware of secondary hæmorrhage.

HÆMORRHAGE FROM LACERATIONS OF CANAL

May arise from

1. Cervix.
2. Vagina.
3. Vestibule.
4. Perineum.

[1] Water of the above temperature may be practically gauged by its allowing the finger to be momentarily held in it without scalding. Water cooler than 115° F. is useless, and increases bleeding.

Is sometimes very profuse, but can at all times be at once differentiated from hæmorrhage at the placental site by its occurrence coincident with well-marked uterine contractions and firmness.

Treatment.

By suture.

By vaginal plug.

To suture cervix, pull well down with volsella, and push down fundus supra-pubically. Use silk-worm gut sutures.

SECONDARY HÆMORRHAGE.

Very uncommon later than one hour after delivery of placenta, but may be caused by undue exertion causing detachment of thrombi from mouths of uterine sinuses, and is specially to be feared after placenta prævia.

Copious hæmorrhage later than one week after delivery is rare, and is usually caused by

Submucous fibroids or some retained products of conception becoming expelled.

Fibrinous polypi, formed by the successive deposition of layers of blood in stalactite form, are occasionally met with at this time, and give rise to alarming bleeding.

Treatment.

In all cases of secondary hæmorrhage, the cavity of the uterus should be thoroughly explored, and any growths or irregularities of its surface removed.

HÆMATOMA.

An effusion of blood into the cellular tissue of pelvis.

The source of hæmorrhage may be the vulvar, vaginal, or uterine veins.

It may occur during or after labour.

As the blood tends to gravitate, it usually forms a blue-coloured swelling at the vulva, varying in size from an egg to a fœtal head.

The hæmorrhage, if copious, may infiltrate the entire pelvic cellular tissue, bulging the posterior vaginal wall forwards, and splitting the layers of the broad ligament, and even forming an abdominal tumour (extra peritoneal hæmatocœle).

Symptoms and Signs.

If small,

Pain, swelling, and discolouration at vulva.

If large,

As above, along with constitutional symptoms of hæmorrhage.

Prognosis.

According to size.

1. Tumour may be absorbed.
2. May rupture and patient recover.
3. Death may occur from hæmorrhage with or without rupture.
4. Death may occur from gangrene and suppuration of tumour.

Treatment.

If recognised during labour, deliver as soon as possible.

If rupture occur, plug with tincture of iron$_2$.

Do not open sac if avoidable.

If tumour small, leave entirely alone.

If tumour large, free incision is nearly always necessary after a few days to prevent gangrene of its coverings,

Incision must always be performed under most rigid antiseptic precautions.

RETAINED PLACENTA.

A placenta may be said to be retained if within uterus an hour after labour.

Retention may be due to

I. Adherence to uterine wall.

II. Hour-glass contraction of uterus.

If Adherent.

1. Hold uterus with left hand supra-pubically. Introduce right hand into uterus, and scrape placenta off, commencing at upper edge.
2. Try and remove entire; if not, do so piecemeal.
3. Have hot water injection ready, as hæmorrhage is usually profuse.
4. Thoroughly wash out uterine cavity with antiseptic lotion.

The placenta can easily be distinguished from the firm uterine wall by its soft, granular consistence.

Hour-Glass Contraction.

An irregular uterine spasm, usually accompanied by pain.

May be most conveniently treated by anæsthesia, and slowly introducing hand

through contracted portion in the form of a cone.

Treatment of Anæmia due to Hæmorrhage.

Keep head low and ensure absolute quiet.

Place hot bottles to extremities.

Stimulate flagging heart with subcutaneous ether injections, repeatedly, if necessary.

Give hot fluids to drink, in small quantities at a time.

In extreme cases,

Bandage extremities, and

Transfuse.

CHAPTER XXIV.

Complicated Labour—(*Continued*).

Rupture of Uterus.

Occurs in about 1 in 4000 cases. Most frequent in multiparæ, 482 in 546 cases.

Seat.

Lower uterine segment usually, but may extend upwards to body of uterus and downwards through cervix to vagina.

The tear may be either vertical or transverse, or both combined.

Primary rupture of the fundus may result from disease of uterine wall or subsequently to a previous Cæsarian section.

Varieties.

Complete.

Where tear involves entire thickness of uterine wall.

Incomplete.

Where muscular or peritoneal coats are alone involved.

Causes.

a. From excessive retraction causing marked thinning of lower uterine segment. This may be due to

1. Contracted pelvis.
2. Hydrocephalus.
3. Shoulder presentations.
4. Obliquity of uterus.
5. Undilatable cervix.
6. Impaction of anterior cervical lip.

b. Compression of uterine wall between head and pelvis.

c. Manual operations, *viz.*, turning, etc.

d. Disease of uterus, *viz.*, cancer, etc.

Symptoms and Signs.

Premonitory.

Strong painful contractions.

Bandel's retraction ring felt high above pubes.

After rupture.

1. If complete.
   - *a. Symptoms.*
     1. Sudden cessation of pains.
     2. Feeling of "something given way" in abdomen.
     3. Collapse from shock.
     4. Symptoms of hæmorrhage.
   - *b. Signs.*
     1. Recession or change of presentation.
     2. Recognition of rent in uterine wall.
2. If incomplete.
   - *a.* Feeling of "something having given way" in abdomen.

b Gradual but marked decrease in pains.
c. Symptoms of collapse from shock and hæmorrhage.

Treatment.

1. Prophylactic.
   If rupture imminent.
   a. Procure deep anæsthesia to allay uterine contractions.
   b. If vertex present.
      1. Correct any uterine obliquity.
      2. Apply forceps, and, if futile, perform craniotomy.
   c. If shoulder presentation.
      Be extremely careful of attempts at turning. If thoroughly impacted, decapitate.
   d. If cervix undilatable.
      Incise freely.
2. After rupture.
   a. If vertex presents, and still engaged in pelvis, extract by forceps, and, if tear complete, perform laparotomy.
   b. Perform laparotomy.
      1. If presenting part has receded.
      2. If shoulder presentation.
      3. If cervix undilatable.

   By laparotomy.
      1. Remove the fœtus
      2. Stitch tear in vagina if present.
      3. Remove uterus, as in Porro's operation. (*See* page 177.)
      4. Carefully cleanse peritoneal cavity.

INVERSION OF UTERUS.

Occurs 1 in 150,000 cases.

Was previously more common from malpraxis in the delivery of the placenta by pulling on cord.

Anatomy.

Invagination of part of uterine wall into uterine cavity.

This may be partial or complete.

Causes.

Artificial.

a. Pulling on cord in delivery of the placenta.

b. Pushing in portion of uterus from above.

Spontaneous.

a. From complete flaccidity of organ.

b. From partial flaccidity of organ.

When a portion of the uterine wall becomes invaginated, the rest of the uterus contracts on it, and tends to drive it through cervix, thus increasing the invagination.

Partial flaccidity is most frequently met with at the placental site.

Symptoms.

A straining, bearing-down feeling after birth of child, associated with hæmorrhage and signs of shock.

If inversion be partial, much pain is experienced from the contractions of the uterus.

If complete, it is usually painless.

Diagnosis.

Soft body projecting through cervix.

Absence of fundus uteri supra-pubically.

Placenta may be still adherent.

Prognosis.

Grave.

Death may occur from shock or hæmorrhage.

If uterus not returned to normal state at once, 33 per cent. die within a month.

Treatment.

Remove placenta if adherent, and reduce inversion as quickly as possible.

Method of Reduction.

Complete anæsthesia.

Introduce entire hand into vagina, grasp lowest part of inverted portion, and push steadily upwards through cervix, counter pressure being at the same time exerted supra-pubically.

PROLAPSUS FUNIS.

Presentation of the umbilical cord.

Occurs about 1 in 150 cases.

May occur with any presentation.

Causes.

1. Want of complete adaptation of soft passages round ovum at girdle of contact. It is thus met with most frequently in
   a. Contracted pelvis.
   b. Malpresentations.
   c. Over-distension of uterus from excess of liquor amnii.
2. Low placental implantation.
3. Long cord.

Diagnosis.

Easy. Presentation of cord.

Prognosis.

To mother.

Favourable.

To child.

Grave.

In cephalic presentations, 64 per cent. die.

In other presentations, 32 per cent. die.

Cause.

Asphyxia from compression of cord between pelvis and fœtus is the cause of death.

Treatment.

Essentially consists in relieving cord from pressure.

If no pulsation in cord, treatment unnecessary, as child is already dead.

If vertex present.

If membranes intact.

1. Place patient in genu pectoral position, as in this position the cord frequently goes up spontaneously. If not,
2. Preserve membranes carefully till full dilatation, then try to replace; if not possible, turn and deliver.

If membranes ruptured and os dilated.

1. Try to replace cord by placing patient in genu pectoral position, and with hand in vagina push cord above presenting part.
2. If reposition impossible, turn or apply forceps according to character of pelvis and possibility of rapid delivery.

If pelvis flat, turn.

Justo minor, forceps.

Membranes ruptured, os partially dilated.

1. Genu-pectoral position.
2. Try to replace with fingers or catheter.[1]
3. Champetier de Ribes bag may be here used with great benefit, as it dilates cervix, and at the same time pushes presenting part up, and thus prevents pressure.

Face presenting and cord prolapsed.

1. Always turn, if possible.
2. If not, hasten delivery by forceps.

[1] A loop of wool is thrown round cord, and the loop is then fixed to the catheter; by pushing the stilette through eye of catheter, then through loop and back tip of catheter.

CHAPTER XXV.

Complicated Labour—(*Continued*).

Plural Births or Super-impregnation.

By *super-fecundation* is meant the fertilisation of more than one ovum at the same inter-menstrual period but at different times. Proved by mother being delivered of twins—one mulatto and the other white.

By *super-fœtation* is meant the fertilisation of another ovum after uterus is already gravid. It thus implies ovulation during pregnancy, which probably does not take place.

Examples of twins being born in different degrees of maturity are probably due to unequal development although of same age.

Plural Births

Vary in frequency in different countries.

Twins occur in Britain about 1 in 90.
Germany „ 1 in 84.
Belgium „ 1 in 61.
Ireland „ 1 in 58.

Triplets, 1 in 10,000.

More than three extremely rare, and there is no authentic record of over five.

Mode of Production.

I. From two distinct ova, { In one ovisac { In one ovary. / In two ovisacs { In each ovary.

II. From one ovum, { With double germinal area. / Single germinal area, which divides by fission.

Development.

If distinct Ova.

Two deciduæ reflexæ.

Two chorions and amniotic sacs.

Two placentæ, which may unite at edges, but circulation of each is quite distinct.

May be of different sex.

Abnormalities.

Decidua reflexa may be common to both.

Chorionic division may be absorbed, giving appearance of only one chorion.

If from one Ovum.

One common chorion.

One decidua reflexa.

One placenta.

Always of one sex.

May have one or two amniotic sacs according to whether developed from single or double germinal area respectively.

Abnormalities.

1. Amniotic division may be absorbed, the two original amniotic cavities being thus fused.
2. Formation of acardiac fœtus.
3. Double monsters, and teratomata may be found from incomplete fission.

Acardiac Fœtus.

This is the result of the heart and circulation in one twin being stronger than that of the other. By the intimate anastomoses in the placenta of the two circulations, the force of the blood current in the stronger twin causes a regurgitation through the umbilical arteries of the weaker twin, whose cardiac circulation is thus entirely destroyed. The heart, head, and upper part of the body are therefore entirely undeveloped, although the lower limbs, etc., continue to grow from the nourishment they receive through the regurgitated circulation.

Size and Weight of Twins.

Usually under average; combined they average 9½ lbs.

One twin is usually larger than the other.

Sex.

64 per cent. same sex. If same sex, male and female occur in equal proportion.

Course.

1. Are usually expelled prematurely, 66 per cent.
2. One may be expelled prematurely, and the other be carried to full time.
3. One may die and be expelled alone.
4. One may die, and, being retained in utero, become shrivelled and flattened (fœtus papyraceous).
5. One may develop as a myxomatous mole,

or one may develop hydramnios. This is extremely common.

6. Have a marked tendency to cause eclampsia

Presentation.

Both heads, 49 per cent.

Head and breech, 32 per cent.

Both breech, $8\frac{1}{2}$ per cent.

Head and transverse, 6 per cent.

Breech and transverse, 4 per cent.

Both transverse, $\frac{1}{2}$ per cent.

Diagnosis.

Usually not found till birth of first. May, however, be diagnosed during pregnancy.

By excessive size of uterine tumour associated with numerous fœtal parts, and two fœtal heads.

Occasionally two hearts may be heard beating with different frequency.

Prognosis.

To mother, more unfavourable than normal.

I. From large placental site predisposing to
   a. Hæmorrhage.
   b. Septic absorption.

II. Over-distension of uterus causing inertia and its sequelæ.

III. Complications on part of twins locking, etc.

IV. Frequency of maternal complications.
   a. Eclampsia.
   b. Hæmorrhage.

To children.

Unfavourable.

1. From prematurity.
2. Frequency of malpresentations.

Mechanism.

Labour usually easy as children are small.

After birth of first twin, the second is usually born spontaneously within an hour, 79 per cent.

A protracted interval between births is due to inertia from overdistension.

Placentæ.

1. Most frequently born after second child.
2. Placenta of first may be born before second child.
3. Both may be born before birth of second child.

The third stage is frequently delayed.

a. From large size of placenta.

b. From inertia due to overdistension.

Rules for Management of Normal Twin Labour.

1. After birth of first child, tie end of cord attached to placenta, in case of free communication between the circulations of the twins causing hæmorrhage.
2. If head or breech of second child presents, wait half an hour for pains returning spontaneously; if no return, rub and knead fundus uteri to stimulate contractions.
3. If second child transverse, turn at once, but wait on pains to complete delivery.
4. If pains do not return in an hour, rupture membranes and hasten labour artificially as os is apt to close.

5. Be specially careful to compress uterus suprapubically during birth of second child, so as to prevent hæmorrhage from inertia.
6. Express placenta soon, as from its size it is apt to be retained in uterus after separation, and give rise to hæmorrhage by preventing complete contraction.
7. Be always alert for hæmorrhage in third stage.

Management of Complex Twin Labours.

If membranes present together, rupture lower if both cephalic presentations; if one breech and one cephalic, rupture membranes of cephalic.

If membranes ruptured and both heads tend to enter brim simultaneously, push up the higher and lay hold of lower with forceps if accessible; if head and breech, push up breech to prevent chins locking.

If after birth of first head, and before birth of its body, the second head engages in the pelvis, try and deliver head of second child.

As the first child is almost always born dead in those cases, it should always be sacrificed to save the second. Thus, if much delay, decapitate first child to allow of the easier extraction of the second.

Chin Locking in Head and Breech Presentations.

If after the birth of the breech of the first child the head of the second enters the pelvis before the head of the first,

1. Push up and try to unlock chins.

2. If unsuccessful, lay hold of head of second child with forceps, and deliver.
3. If delivery thus impossible, decapitate first child, as it is usually born dead.

CHAPTER XXVI.

Minor Complications of the Puerperium.

I. Of the Uterus.

a. Subinvolution of the Uterus.

Absence of the normal decrease in the size of uterus.

Causes.

1. Inertia uteri, from
   - *a.* Delayed labour.
   - *b.* Overdistension (twins, hydramnios, etc.).
   - *c.* Non-lactation.
2. Retention of portions of secundines.
3. Inflammation (pelvic).
4. Too early rising, causing flexion, etc.

Symptoms.

If unassociated with inflammation or retained products of conception, it is seldom recognised till several weeks or months after labour, when profuse menstruation, backache, and leucorrhœa point to its presence.

Treatment.

1. Hot vaginal douche, 105-110° F., thrice daily.

2. Glycerine vaginal tampions thrice weekly.
3. If severe leucorrhœa and menorrhagia, curette, and cauterize endometrium with carbolic acid.

If subinvolution be due to retained membranes, etc., the lochial discharge is excessive both as regards amount and persistency.

Treatment.

Remove retained products by finger or curette.

If subinvolution due to inflammation, the lochial discharge is usually diminished in quantity, and the inflammatory symptoms alone are evident.

For treatment, see "Inflammation" (page 223).

b. Superinvolution.

Excessive involution, causing atrophy of uterus.

Extremely rare.

Causes.—(Problematical).

1. Excessive hæmorrhage.
2. Constitutional (phthisis).
3. Nervous reflex, such as fear, mania, etc.

Symptoms and Signs.

Amenorrhœa and undersized uterus.

Treatment.

Generally useless, the patient practically having reached the menopause. If ovaries do not atrophy, an intra-uterine stem pessary (galvanic) may be useful.

c. After-Pains.

Intermittent uterine contractions, associated with pains sometimes of great severity.

If slight in multiparæ, may be looked upon as normal and salutary.

If severe, are usually due to incomplete uterine contraction, loaded rectum or bladder, or commencing inflammatory mischief.

Treatment.

Compress uterus supra-pubically.

Empty rectum and bladder.

Insert morph. suppos. $\frac{1}{4}$ gr.

After-pains in primiparæ are at all times abnormal.

II. Abnormalities in Lochia.

a. Sudden Arrest.

Due to inflammation or mechanical obstruction to flow from flexions, etc.

b. Excessive.

Due to want of complete involution. (*See* "Subinvolution."

c. Fœtid.

Due to retained products undergoing decomposition.

If met with, the uterine cavity should be thoroughly washed with 1·4000 corrosive solution.

III. Abnormalities of Micturition.

Generally some discomfort is felt for a few days after labour.

a. Incontinence of Urine.

1. From paralysis of neck of bladder due to pressure.

2. From overdistension of bladder.
3. From fistulæ.

These, in the vast majority of cases, are due to sloughing from prolonged pressure, and are formed some days after labour.

b. *Retention of Urine.*

Extremely common in primiparæ.

1. Reflex, such as tear in perineum, and tight perineal stitches.
2. Hysterical, nervous.
3. Swelling from contusion of soft parts round urethra.
4. Paralysis of bladder from previous overdistension.

Treatment.

Try to promote spontaneous evacuation by means of warm cloths placed over vulva, and bathing parts with warm water.

Do not delay longer than ten hours before passing catheter.

c. *Frequency of Micturition.*

Due to cystitis or irritability of bladder from previous pressure or overdistension.

If simple irritability, treat by potass, hyoscyamus, and buchu internally, with plenty of demulcent drinks.

In cystitis, wash out bladder with 1·40 boroglyceride solution. Keep on milk diet, and give

℞ Benzoate of ammonia, 15 grs.
Tinct. hyoscyami, 15 m.
Inf. buchu, ℥ss. : Ter die.

IV. Disorders of Lactation.

a. Absence of Milk.

Try to promote secretion by hot drinks; drugs are of little value.

b. Excess of Milk. (*Galactorrhœa.*)

Very exhausting to mother, and as the milk is usually poor in quality, it is also detrimental to child.

Symptoms of exhaustion due to nursing.

Headache.
Sleeplessness.
Emaciation.
Anæmia.
Palpitation.

Treatment.

Arrest secretion by

1. Belladonna plaster 6 in. by 6 in., or belladonna and lanoline ℥i. to ℥i. smeared on breasts daily.
2. Saline purge.
   Henry's solution of salts ℥i. every second morning.
3. Give as little fluid as possible to drink.
4. If breasts become full, hard, and painful, extract milk by breast pump.

c. Fissures and Excoriations of Nipple.

Exquisitely painful, though frequently very minute.

Treatment.

1. Let child suck through shield.
2. Wash and dry thoroughly after each attempt at suckling.
3. Paint nipple with equal parts of Sulphurous acid and glycerinum tannici.
4. Cauterise fissure with nitrate of silver.

d. Abscess of Mamma

May occur any time during lactation.

Causes.

1. Chill.
2. Want of complete emptying of breast.
3. Extension of inflammation from fissures, etc.

Symptoms.

Rigour or feeling of chilliness.

Pain in breast.

Increase of temperature and pulse.

Signs.

Areas of hardness painful to touch.

If superficial, skin becomes red and hot.

Treatment.

Absolute rest.

Support breast by flannel bandage.

Relieve pain by opiates.

Rub breast gently with warm oil.

Empty thoroughly by pump.

If only small area implicated, do not arrest milk secretion ; but if much of organ is involved, stop secretion as soon as possible.

If abscess forms, early free incision parallel to line of ducts, under antiseptic precautions, is best.

General Rules for Lactation.

1. All mothers, unless constitutionally weak, should nurse, as it is beneficial to both mother and child.
2. Put child to breast early; during first two days twice in twenty-four hours, and after milk established, every two hours during the day, and twice or thrice during the night.
3. Wean child
   a. Normally about tenth month.
   b. Whenever symptoms of exhaustion occur.
   c. If menstruation returns.
   d. If pregnancy recurs.

CHAPTER XXVII.

Grave Complications of Puerperium.

Phlegmasia Alba Dolens.

An inflammatory affection of the veins of the leg, associated with swelling of limb and constitutional symptoms.

Period of Onset.

Varies greatly.

Usually during second or third week. Seldom earlier; occasionally much later.

May occur during pregnancy; therefore not essentially a puerperal disease.

Causes.

Normal fibrinous state of blood during pregnancy, reacted on by the

1. Puerperal state.
2. Septic absorption.
3. Previous excessive hæmorrhage.

Pathology.

Probably primarily a thrombosis in veins spreading from uterine sinuses, causing a secondary phlebitis.

Symptoms.

May involve one or both legs, the left more frequently.

1. Pain.
2. Swelling.
   Commencing within twenty-four hours, after which pain abates slightly, though by no means entirely.
3. Constitutional symptoms.
   Rapid pulse, 120; and increase of temperature, 101-102° F., with evening rise.
   Occasionally the constitutional symptoms are but slight.

Appearance of leg.

Swollen, tense, white and shiny.

Does not pit on pressure till acute stage abates.

Veins may be felt hard and knotty, but exquisitely painful to touch.

Distinct red lines may be seen along course of superficial branches.

Course.

Acute symptoms abate in course of ten days, characterised by

Pain disappearing; tension diminishing; leg pitting on pressure.

The swelling is seldom entirely reduced before six weeks, and may last many months, often returning upon the least exertion. During convalescence the leg has a stiff wooden feeling, with frequent neuralgic twitches.

Relapses are frequent.

Terminations.

1. Generally complete absorption and cure.
2. Glands and cellular tissue may suppurate.
3. Detachment of clot may cause pulmonary embolism

Treatment.

When acute.

Absolute rest.

Relieve pain by rolling leg in hot water cloth, sprinkled with laudanum and covered by macintosh.

Treat constitutional symptoms by antipyretics, quinine, antipyrine, etc.

After Acute Stage.

Raise foot and promote absorption by pressure with cotton wool, and flannel roller bandage.

Do not, under any circumstances, rub leg, as clot may be detached.

Pulmonary Thrombosis and Embolism.

Both undoubtedly occur.

Pulmonary embolism is always secondary to a pre-existing thrombosis situated elsewhere, from which a portion of clot has been detached. It thus seldom occurs before the nineteenth day.

Pulmonary thrombosis is a primary lesion which may occur at any time, but is, in the great majority of cases, formed before the fourteenth day, thus corresponding closely with thrombosis in the leg, etc.

Symptoms.

Entirely correspond in both; are usually sudden in their onset.

1. Intense dyspnœa.
2. Tumultuous and irregular cardiac action.
3. Quick, feeble pulse.
4. Unimpaired intelligence.

Prognosis.

Extremely fatal, but recovery is known.

Treatment.

1. Complete repose. This must be absolutely maintained for six weeks.
2. Cardiac stimulants. Digitalis, Strophanthus, etc.

Arterial Thrombosis and Embolism.

Rare, but may occur in any of the branches of the systemic circulation, being most frequently met with in the cerebral, brachial, and femoral arteries.

Syncope and Shock.

May occur independently of hæmorrhage as the result of

1. Sudden diminution of abdominal pressure causing cerebral anæmia.
2. Reflex from pressure on ovaries in compressing uterus.
3. Simple syncope from exhaustion.

It is seldom of grave prognostic significance, but is at all times fraught with much anxiety during its persistence; death having resulted.

Treatment.

Subcutaneous injections of ether or whisky, warm applications to precordia.

Sudden deaths have also been described from apoplexy, and the entry of air into veins through uterine sinuses.

CHAPTER XXVIII.

Inflammatory Affections of Puerperium.

Chiefly septic in their origin.

Variously classified by different authors.

Can be most easily and practically considered according to seat of lesion, thus,

1. Inflammation of vagina and vulva.
2. ,, uterus and tubes.
3. ,, cellular tissue.
4. ,, peritoneum.
5. Phlebitis uterina.
6. Septicæmia proper.

All may be associated or occur independently.

Inflammation of Vagina and Vulva.

1. Mucosa swollen, and papillæ enlarged.
2. Small ulcerated patches, sometimes diphtheritic.
3. Increased discharge, occasionally fœtid and purulent.

Symptoms.

1. Sense of chilliness on second or third day usually.
2. Rise of temperature and pulse remittent.
3. Pain of a burning character on defæcation and micturition.
4. Occasionally retention of urine.

Treatment.

Syringe vagina thrice daily with 1·4000 corrosive solution.

Cauterise ulcers with pure phenol.

Cure within a week is the usual sequence.

INFLAMMATION OF UTERUS AND TUBES.

May be confined to the superficial layers of the uterine cavity (endometritis), or cellular and purulent infiltration of the entire thickness of the organ may exist (metritis).

From the intimate communication with the Fallopian tubes, they frequently are secondarily affected, and become swollen, tortuous, and occasionally distended with pus (pyosalpinx).

Symptoms.

Fever, ushered in by chilliness about the third day.

Pain in hypogastrium, sometimes intermittent.

Signs.

Uterus subinvoluted and tender on pressure.

Cervix œdematous and bleeds easily.

Purulent and fœtid discharge.

Treatment.

Turpentine stupes to hypogastrium.

Thoroughly wash out uterine cavity with 1·4000 corrosive sublimate solution.

This is to be repeated according to effect constitutionally and locally, repetition being avoided unless symptoms demand.

If intra-uterine douching be insufficient, thoroughly swab out uterine cavity with iodised phenol, 1 in 5.

INFLAMMATION OF CELLULAR TISSUE.

Pelvic Cellulitis or Parametritis.

May be secondary to inflammation of the uterus.

May originate primarily in parametrium from septic absorption through tears in the cervix.

Pathology.

An infiltration by serum and other inflammatory products of the cellular tissue in the pelvis. (*See* diagram.)

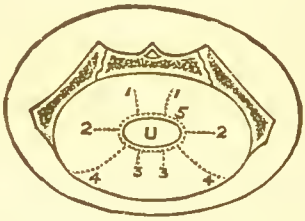

Fig. 17. Diagram of transverse horizontal section through pelvis, showing seats of cellular tissue by dotted lines. U, uterus; 1, utero-sacral ligaments; 2, broad ligaments; 3, utero-vesical ligaments; 4, round ligaments; 5, parametrium.

Symptoms.

1. Pain.

   An inconstant symptom, depending upon involvement of the adjacent peritoneum (perimetritis).

2. Constitutional.

   Usually commencing with a chill on second to fourth day, but may be so slight as to be overlooked.

3. Vesical and rectal.

   Trouble from pressure of inflamed tissue.

Signs.

1. Rapid pulse, over 100 beats per minute.
2. Increased temperature, 101° F. to 105° F
   The temperature is frequently normal in the morning, and only elevated in the evening.
3. By vaginal examination there will be felt a tender mass in close proximity to the uterus, localised to one or other of the sites of the cellular tissue, and obliterating fornix.
4. The leg on the affected side is usually flexed on abdomen.

Course of Symptoms.

Fever usually ends in a week, 70 per cent.

May last a fortnight, 20 per cent.

Prolonged over several weeks, 10 per cent. This is usually indicative of suppuration.

Course of Disease.

1. Mass remains localised, and is completely absorbed in a few weeks.
2. Chronic inflammatory mass remains for many months.
3. Inflammatory exudation continues, and spreads into iliac fossæ or beneath anterior abdominal wall.
4. Suppuration and abscess formation, which points most commonly
   a. In vaginal fornix.
   b. Above Pouparts ligament.

   May also point
   1. Below Pouparts ligament (psoas abscess).
   2. In labium.

3. In buttock through sciatic notch.

Bursting of the abscess into one of the adjacent hollow viscera is by no means uncommon.

Treatment.

In Acute Stage.

1. Absolute rest.
2. Turpentine stupes to hypogastrium.
3. Saline purge (Henry's solution, ℥i.).
4. Alleviate pain by morphia.

When Sub-Acute and Chronic.

1. Hot vaginal douche.
2. Counter irritation to brim of pelvis by blisters, iodine, etc.
3. Ichthyol treatment.
   a. Pills, 1 gr., thrice daily.
   b. 15 per cent. ichthyol glycerine vaginal plugs.
   c. 15 per cent. ichthyol lanoline to be rubbed into groins.
4. If abscess forms, evacuate, wash, and drain.

PERITONITIS.

May be localised (in pelvis) or diffuse.

Pelvic Peritonitis.

Also called perimetritis.

Cause.

Spread of inflammation from uterus, tubes or cellular tissue.

Practical Varieties.

1. *Simple Adhesive, with little exudation.*

Here we have matting of the uterus, ovaries and tubes to one another, and to the

adjacent parietal peritoneum, with consequent fixation.

2. *Exudative.*

A sero-plastic effusion thrown out into the peritoneal cavity, and surrounding the pelvic viscera, the whole forming a concrete mass.

Symptoms.

1. Constitutional from fever, *viz.*, headache, sleeplessness, etc.
2. Severe pain in hypogastrium.
3. Vomiting a frequent accompaniment.
4. Frequent and painful micturition.
5. Constipation and painful defæcation.

Signs.

Vary according to extent and variety.

1. High temperature and pulse.
2. Pain on abdominal palpation.
3. Slight tympanites.
4. Vaginal examination shows

Tenderness and resistance on pressure through vaginal roof.

Vaginal fornices free.

Body of uterus fixed, and exquisitely painful on attempts to move it.

In the exudative varicty the pelvic roof feels firm and boardlikc ; the uterus, ovaries, and tubcs surrounded by effusion, forming one indivisible mass.

Course.

Acute symptoms usually disappear within a week, and

1. Absorption of the effusion slowly results.
2. Permanent adhesions of the pelvic organs to surrounding structures may remain.
3. Abscess may form ; this is rare.
4. Frequent relapses of an acute character are characteristic of tubal inflammation.

Treatment.

As in pelvic cellulitis, with which it is frequently more or less associated.

General Peritonitis.

Usually the result of extension of inflammation from perimetritis (suppurative).

May be a direct septic inflammation through the lymphatics (peritonitis lymphatica).

Symptoms.

1. *Of Suppurative Type.*

Initial symptoms of perimetritis, which spread over entire abdomen, and usually ushered in by intense chilliness.

Abdominal pain, increased by slightest movement or pressure.

Well marked tympanites.

Jerky respirations.

Pulse small and quick, 120 to 160.

Temperature high, 104° F.

Cerebral symptoms not prominent early.

2. *Of Lymphatic Type.*

Ushered in by rigor.

Rapid pulse and high temperature.
Great tympanites, causing dyspnœa.
Abdomen comparatively painless on pressure, etc.
Severe perspiration.
Cerebral symptoms, delirium, etc., developed early.
Albuminuria usually present.
Other signs of septic poisoning show themselves in joints, pleuræ, etc.

Course.

1. Acute symptoms last from four to six days in favourable cases, and complete recovery results.
2. May be immediately fatal.
3. Temporary improvement, with secondary abscess formation, causing death, occasionally occurs.

Treatment of Peritonitis.

Constitutional.

1. Reduce fever by

a. Quinine.

This is best given in large doses occasionally. Thus give

℞. Quiniæ Sulph., grs. xx.
Pulv. opii., gr. i.
or
℞. Warburg's tincture, ℥i.

b. Salicylate of Soda.

20 grs. every four hours till temperature reduced.

c. Antipyrine, antifebrine, etc.

d. Sponge surface with vinegar and water, equal parts. Apply ice bag to head.

In severe cases a bath, 70° F. to 80° F., is necessary.

2. Stimulate freely.

Whisky or brandy, ℥i. to ℥ii. hourly.

Stimulate cardiac action by strophanthus, digitalis, etc.

3. Support strength by strong, easily assimilated foods, given frequently and in small quantities.

4. Relieve pain by opium internally, and turpentine stupes applied to abdomen.

Local.

Thoroughly cleanse uterus and vagina by warm antiseptic douches.

In some cases laparotomy and thoroughly flushing out peritoneal cavity is of the greatest value, and should always be considered before disease too far advanced.

SEPTICÆMIA VENOSA (Pyæmia).

A septic infection of the thrombi in the uterine sinuses, causing their disintegration, and resulting in the dissemination of secondary septic foci throughout the system.

Period of Onset

Usually after the first week of the puerperium.

Symptoms.

A series of sudden and intense rigors of a pro-

longed nature, accompanied by high fever, and ending with profuse perspirations.

Secondary febrile conditions, the result of metastatic abscesses situated in the liver, lungs, etc.

Prognosis.

Extremely unfavourable, death usually resulting in the second or third week, though the patient may linger for months, with occasional periods of apparent convalescence, but too apt to raise false hopes of recovery.

Recovery is possible.

SEPTICÆMIA LYMPHATICA.

The absorption of septic germs and their dissemination along the lymph channels, giving rise to secondary purulent inflammations in the peritoneum, pleuræ, joints, pericardium, meninges, etc.

Period of Onset.

Usually between second and fourth day, seldom later than first week of puerperium.

Symptoms.

Ushered in by rigour more or less intense.

Increased pulse rate always present, 120-160.

High temperature, 1028-1068 F., subject to marked remissions.

Profuse perspirations, with rapidly increasing prostration.

Diarrhœa alternating with constipation.

Tongue dry, red, and cracked.

Early transient delirium.

Secondary affections of serous cavities, *i.e.* peritonitis, pleurisy, and disease of joints.

Course.

1. Slow recovery.
2. Death.
   - *a.* In a few days, perhaps hours.
   - *b.* Most frequently about third week.
   - *c.* After many weeks.

SAPRÆMIA.

The term given to the absorption of the products of putrefaction (ptomaines, etc.) into the system, giving rise to constitutional symptoms, such as

High fever.

Headache.

Profuse perspirations, etc.

It is usually the result of decomposition of some products of conception retained in utero, and rapidly disappears on thoroughly cleansing and disinfecting the uterine cavity.

Treatment.

All the above constitutional conditions are to be treated on the same lines as proposed for peritonitis, which is a frequent concomitant.

In all, the three great general factors to be considered are,

1. To attack the disease at its source by destroying as far as possible the seat of septic origin by antiseptics.
2. To strengthen the constitution by stimulants, food, etc., so as to withstand the onslaughts of the already absorbed germs.
3. To assist in the reduction of fever, and in combating the germs, by drugs, such as quinine, antipyrine, etc., as already described.

CHAPTER XXIX.

Puerperal Insanity.

Includes insanity of pregnancy, puerperium, and lactation. Forms about 10 per cent. of all forms of insanity in females.

Relative Frequency.

During pregnancy, 18 per cent.
During puerperium, 47 per cent.
During lactation, 35 per cent.

Insanity of Pregnancy.

May be either mania or melancholia. The latter is more frequent.

Elderly primiparæ are most often affected. It seldom manifests itself before the fourth month of gestation, and generally continues till after delivery.

The prognosis is favourable, 70 per cent. recovering within six months after delivery. Recovery before delivery seldom occurs.

Puerperal Insanity.

May be mania or melancholia. More frequently the former.

Is considered puerperal if originating within a month after delivery.

Mania usually develops within sixteen days. Melancholia later.

Causes.

a. Heredity.

b. Exhaustion.

1. From prolonged labour.
2. From excess of hæmorrhage.
3. Too rapid and frequent pregnancies.

c. Shame and fear of exposure if illegitimate.

d. Fear.

Occasionally during delivery, as the head passes perineum, the excessive pain causes a transient delirium, during which the mother may destroy her child, a point of great importance medico-legally.

Symptoms.

Premonitory.

Restlessness.

Sleeplessness very characteristic.

Rapid pulse and elevated temperature.

Causeless dislike of friends, child, or attendants.

Actual.

Varies according to type of insanity. A sudden noisy delirium characterises mania, while a gradual development of deep depression, accompanied by morbid delusions and suicidal tendencies are the conditions met with in melancholia.

INSANITY OF LACTATION.

Chiefly melancholia.

Causes.

Same as puerperal insanity, to which add exhaustion from excessive lactation.

Prognosis less favourable than other puerperal varieties; 12 per cent. become permanently demented.

Treatment (Special).

Mania.

Procure sleep by chloral. 20 to 30 grs. at bedtime.

Give large quantities of easily digested food, milk, etc.

Outdoor exercise when practicable.

Do not give stimulants where excitement great, but use if indicated by weakness.

Private treatment if possible should be adopted.

Melancholia.

Procure sleep by morphia.

Give food in large quantities.

Stimulate freely.

Asylum treatment usually indicated.

Treatment (General.)

Constant watching by attendant is essential.

Remove patient from friends, as their presence is a constant source of irritation.

Remove child at once.

Feed forcibly if food not spontaneously taken.

Change of air and scene is always conducive to more rapid recovery.

If patient pregnant, do not procure premature delivery unless special circumstances demand.

Subsequent pregnancies are apt to be followed by return of the disease in an aggravated form.

CHAPTER XXX

Artificial Feeding of Infants.

Table, showing amount and frequency of feedings at various ages, adapted from Rotch :—

Age.	Amount of each feeding.	Intervals* of feeding.	Number of feedings in 24 hours.
First Week, . . .	1 ounce.	2 hours.	10
One to Six Weeks, .	1½ to 2 ounces.	2½ hours.	8
Six to Twelve Weeks, .	3 to 4 ounces.	3 hours.	6
Fourth and Fifth Month,	5 ounces.	3 hours.	6
Sixth Month, . . .	6 ounces.	3 hours.	6
Seventh Month, . .	7 ounces.	3 hours.	6
Eighth to Tenth Month,	8 ounces.	3 hours.	5

*During day only. At night longer intervals are to be recommended.

Composition of Food.

The best of artificial foods is ordinary cow's milk. Great care must, however, be taken to have it perfectly fresh, as it very soon undergoes lactic acid fermentation.

Average Composition of Human and Cow's Milk.

	Human.	Cow's.
Reaction, . . .	Slightly alkaline.	Alkaline at first; soon becomes acid.
Specific Gravity, . .	1032	1029
Water, . . .	87·5	87
Total Solids, . .	12·5	13
Fat, . . .	3·5	3
Albumi ds, . .	1·7	4·2
Sugar, . . .	7·	4·7
Ash, ...	0·2	0·73

Cow's milk, therefore, requires some preparation to make it resemble human milk. It must be diluted, as the casein is in great excess. This dilution, however, reduces the fat and sugar to too small a proportion, and they must be added in the form of cream, pure glucose, cane sugar, or maltose.

Cow's milk, diluted by plain water, although readily digested by some infants, is indigestible to most from the extremely firm curd it forms in the stomach : in these cases plain water must be replaced by barley water or lime water, by the addition of which the density of the curd is much reduced.

The milk should, as a rule, be boiled to check fer-

mentation; this, however, at times interferes with its digestion and must be then discontinued.

Proportions.

During First Week

Milk, 1 part.
Cream, ½ part.
Sugar, 10 grs.
Diluent, 2½ parts.
℥i. every two hours.

From Second till Twelfth Week.

Milk, 1 part.
Cream, dessertspoonful.
Sugar, 15 grs.
Diluent, 2 parts.
℥iss. to ℥ i. every two hours.

Third to Fifth Month.

Milk, 1 part.
Cream, 1 tablespoonful.
Sugar, 15 grs.
Diluent, 1 part.
Four to five ounces every three hours.

Fifth Month.

Milk 1½ parts.
Cream, 1 tablespoonful.
Sugar, grs. xv.
Diluent, 1 part.
Five to six ounces every three hours.

Sixth Month.

Milk, 2 parts.
Cream, 1 tablespoonful.

Sugar, 20 grs.
Diluent, 1 part.
Six ounces every three hours.

From Sixth to Tenth Month.

It is unnecessary to increase the proportion of milk beyond two parts to one of water. The amount of each meal should, however, be increased by one ounce each successive month, and the addition of from one to two teaspoonfuls of Mellin's food twice or thrice daily is to be recommended.

Signs of Indigestion.

1. Crying, fretfulness, pulling up of legs from discomfort, starting during sleep.
2. Regurgitation of sour-smelling clotted milk.
3. Lumpy fæcal exeretion, frequently associated with mucus; green discolouration, and a very offensive odour.
4. Diarrhœa.
   The passage of large stools of a whitish colour is usually due to over-feeding.
5. Constant inordinate appetite.
   The tendency of all mothers and most nurses is to overfeed.

Signs of Health.

1. Happiness, no crying.
2. Increase in weight of 1 lb. each month.
3. Desire for food at ordinary intervals.
4. Regular movement of bowels.
   First six weeks, thrice daily, yellowish white.
   From second month, twice daily, brownish yellow.

5. Sound undisturbed sleep.

No starchy foods should be given to children before the end of the sixth month, as the amylolytic ferments are almost inactive before this age.

After this age some of the highly dextrinised or malted artificial foods may be given (Mellin's, Allen & Hanbury's, Savory & Moore's).

As the child grows older, use the less highly malted foods, and when about *a year old*, ordinary easily digested farinaceous food may be given, the chief basis, however, in all being milk.

At this age small quantities of mutton, veal, or chicken broth may also be given.

Before the end of the second year at the earliest, the chief article of its food must, however, still be milk.

Artificial foods containing proteid digestive ferments should be avoided as general foods, as they tend to weaken the natural secretion of these ferments in the child's alimentary tract. They are, however, valuable in cases of extreme debility or marasmus as after weaning.

In some cases where vomiting and diarrhœa occur after the ingestion of milk in any form, or however prepared, then its use should be abandoned entirely, and either highly malted foods prepared without milk or meat infusions should be alone given,

proteids being generally well digested by infants.

Condensed Milk is not a suitable food for infants, though many seem to thrive on it. Of the two varieties the unsweetened is the best, but it does not keep good for any length of time.

Feeding Bottles.

They must be kept scrupulously clean, and in order to do this, two at least are required (preferably slipper-shaped, as they are more easily cleaned). One is kept in weak boracic acid solution while the other is in use, and they are to be used alternately. They must never on any account have the slightest sour smell.

INDEX.


ISO
9002
Riley Dunn & Wilson Ltd